BLODGETT COMBI

THE BLODGETT COMBI-OVEN/STEAMER
OPERATOR/TECHNICAL MANUAL
NON SELF-FLUSHING MODELS

Models COS-6, COS-101 and COS-101S
(Manufactured before 10/92)

Models COS-201 and COS-20
(Manufactured before 1/95)

BLODGETT COMBI

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PN R5348 Rev F (6/01)

E 2000 – Blodgett Combi

IMPORTANT

WARNING: IMPROPER INSTALLATION, ADJUSTMENT, ALTERATION, SERVICE OR MAINTENANCE CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH. READ THE INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS THOROUGHLY BEFORE INSTALLING OR SERVICING THIS EQUIPMENT

FOR YOUR SAFETY

Do not store or use gasoline or other flammable vapors or liquids in the vicinity of this or any other appliance.

The information contained in this manual is important for the proper installation, use, and maintenance of this oven. Adherence to these procedures and instructions will result in satisfactory baking results and long, trouble free service. Please read this manual carefully and retain it for future reference.

Errors: Descriptive, typographic or pictorial errors are subject to correction. Specifications are subject to change without notice.

A PERSONAL WORD
FROM BLODGETT COMBI

Congratulations on your purchase of the BLODGETT Combi-Oven/ Steamer. We firmly believe that your choice has been a wise one, and trust you will receive many years of excellent service from your new multi-purpose oven.

The Combi-Oven/Steamer concept offers completely new potential for cooking which minimizes shrinkage, while maintaining food's essential vitamins and valuable nutrients. In addition, you will find that cooking with the Combi-Oven/Steamer will save time, labor and extensive cleaning of both the kitchen and the appliance.

With the Combi-Oven/Steamer the quality, taste, consistency, and look of the food are improved, thus endorsing the policy to which we've always adhered: "For Better Cooking!"

Once you've had a chance to use your multi-purpose oven, please tell us, your dealer and colleagues about any creative and interesting applications you have discovered; exchange ideas with other users. Be sure to advise us or your dealer immediately should any mechanical or technical problems be encountered (...we're here to help!) and above all "Enjoy Cooking the BLODGETT Combi-Oven/Steamer Way!

BLODGETT COMBI®

Model:

Your Service Agency's Address:

Serial Number:

Your oven was installed by:

Your start-up inspection service was performed:

Date:

ASAP:

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Introduction

The Blodgett Combi-Oven/Steamer

For quite some time, commercial cooking equipment has remained more or less unchanged. There are kettles, deck ovens, the good old range with its legion of pots and many other extra appliances. The result: time expenditure, excessive manual work, and countless cleaning processes. The last few years have paved the way for a revolution in the equipment of restaurant and institutional kitchens.

The Blodgett Combi-Oven/Steamer offers a completely new method of cooking. With the Oven/Steamer you have the choice of **two cooking processes**: **Steam** and **Hot Air**, either...

- **Separately**
- **Combined, or**
- **In Sequence**

And for easy operation you can choose from three modes:

Steam Hot Air Combi

(Steam & Hot Air)

In the **Steam** mode you can:

- steam
- blanch
- rethermalize
- defrost
- poach

In the **Hot Air** mode you can

- roast
- broil
- bake
- braise

In the **Combination Steam and Hot Air** mode you can:

- defrost
- roast
- reheat
- rethermalize
- bake

Not only that, you can use two or three functions in sequence during one cooking process. We call this:

- combi-steaming
- combi-roasting
- combi-baking

The combination of circulating hot air and steam in the space saving, high performance Combi-Oven/Steamer leads to improvements in the following areas:

- increased productivity in the kitchen
- a reduction in capital expenditures for multiple equipment replacement
- a wider range of menu choices
- a simplified cleaning process

The work process is simplified since products are prepared on or in steam table pans and trays. Food can be cooked, stored, and transported with the same pans. Small amounts of product can be processed efficiently; pre-cooked and convenience foods can be reheated within minutes. Many frozen foods can be processed without prethawing. This flexibility in preparation reduces the need for kettles and steam tables since there is no need for large amounts of food to be kept warm for long periods of time.

Today the improvement of food quality is more important than ever. Vegetables are cooked in the Blodgett Combi-Oven/Steamer without water at the optimal temperature of just under 212_F (100_C), maintaining valuable vitamins, minerals, nutrients and trace elements.Cooking meat in the Combi results in less shrinkage and a firmer, juicier product. The Blodgett Combi-Oven/Steamer is being used more and more for baking. Steam and Hot Air modes make it a general purpose baking appliance.

Description of the Combi-Oven/Steamer

ABOUT THE OVEN/STEAMER

Blodgett Combi-Oven/Steamers are quality produced using high-grade stainless steel with first class workmanship.

The high performance fresh steam generator with its control system makes it possible to enjoy all of the advantages of a high quality steamer at the flick of a switch. Fresh steam enters the oven cavity without pressure and is circulated at high speed. This process enables quick and gentle cooking and ensures high quality food while providing convenient working methods. The steam generator is completely automatic and protected from running dry.

A patented quench system keeps the air in the oven clean. Fumes from roasting and grilling are removed, quenched, and directed out through the condenser drain. The exhaust system is effective in all cooking modes and results in better quality foods and **no flavor transfer**. The fan, which is guarded against accidental finger contact, is driven by a quiet and powerful motor. The condenser draws out excess steam from the appliance. Condensation and waste water, which result during steaming and cleaning, are continuously drained.

The use of high quality insulation impedes excessive heat radiation and saves energy.

The Oven/Steamer has optional adjustable legs which adapt easily to slightly uneven surfaces and optional floor stands which are designed for use with all of the table models.

OVEN/STEAMER OPERATION

The practical oven door, with a viewing window, has a wide swing radius and handle which can be operated easily, even with wet or greasy hands.

Ease of operation is guaranteed through the simple arrangement of the controls. Graphic symbols make the appliance easy for even inexperienced kitchen staff to operate. Steam, Hot Air and Combi modes can be selected with one switch. A fourth function on the mode selection switch, the Cool Down mode, allows the oven cavity to cool down rapidly with the door opened or closed.

Cleaning is kept to a minimum. The interior is sprayed with a self-acting cleaning solution which interacts with steam to easily remove crusts and stains. The oven is designed for easy care and is welded water tight so that the internal cooking cavity may be rinsed with a hose after the steam cleaning process.

Introduction

Oven Features

TABLE MODELS: COS-6, COS-101 AND COS-101S

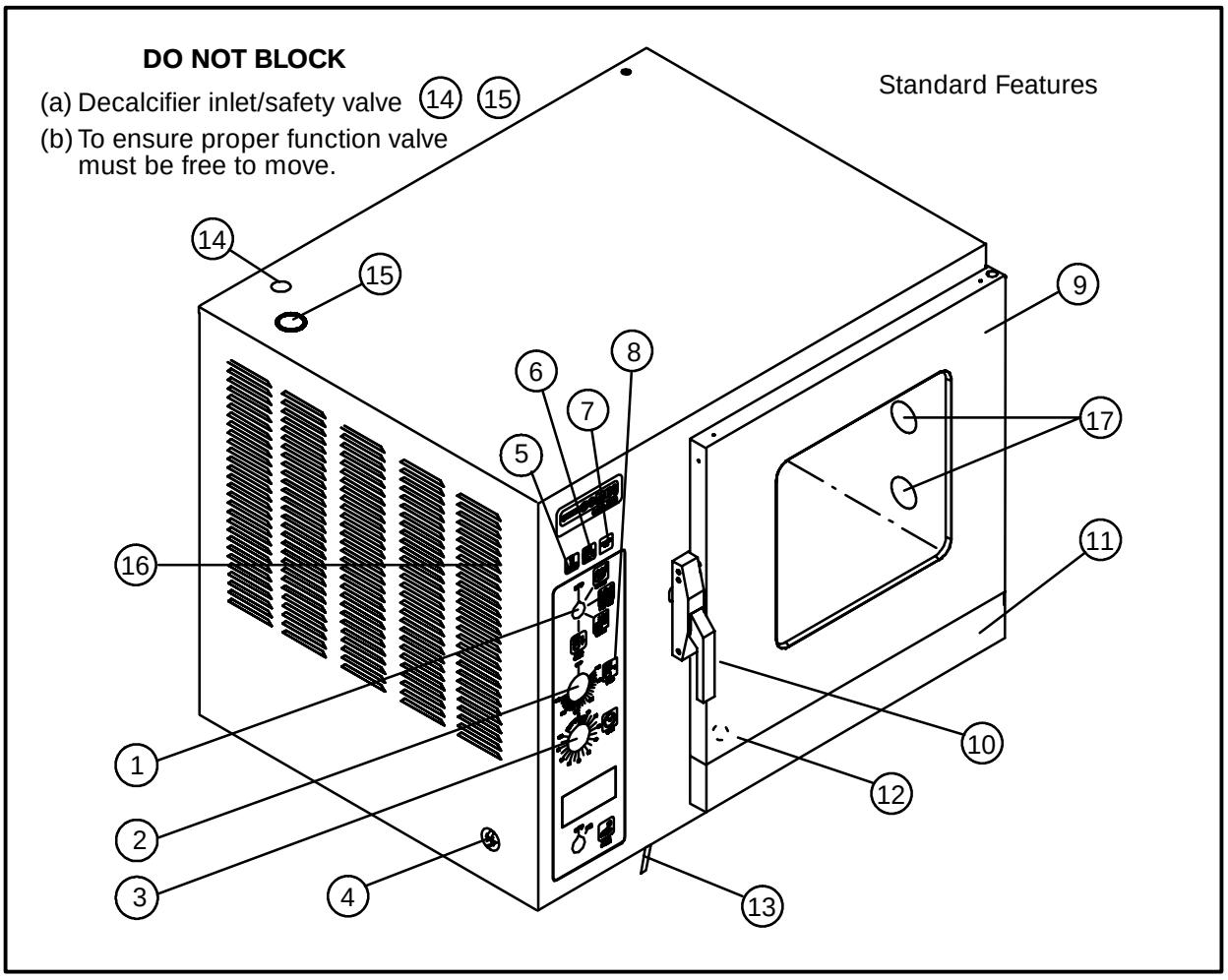


Figure 1

1 Oven Mode Selector Switch
2 Thermostat Dial
3 Timer Dial
4 Power Connection (wire fed through back of oven)
5 Don't Steam Indicator Lamp (Red)
6 Indicator Lamp (Red) "Low Water"
7 Power "On" Indicator (Green)
8 Heating Indicator (Red)
9 Oven Door
10 Door Handle
11 Drip Collector (removable for cleaning)
12 Door Contact Switch
13 Decalcifying Valve Lever
14 Air Vent
15 Decalcifying Inlet & Pressure Safety Valve
16 Air Vents
17 Oven Light

Oven Features

FLOOR MODELS: COS-20 AND COS-201

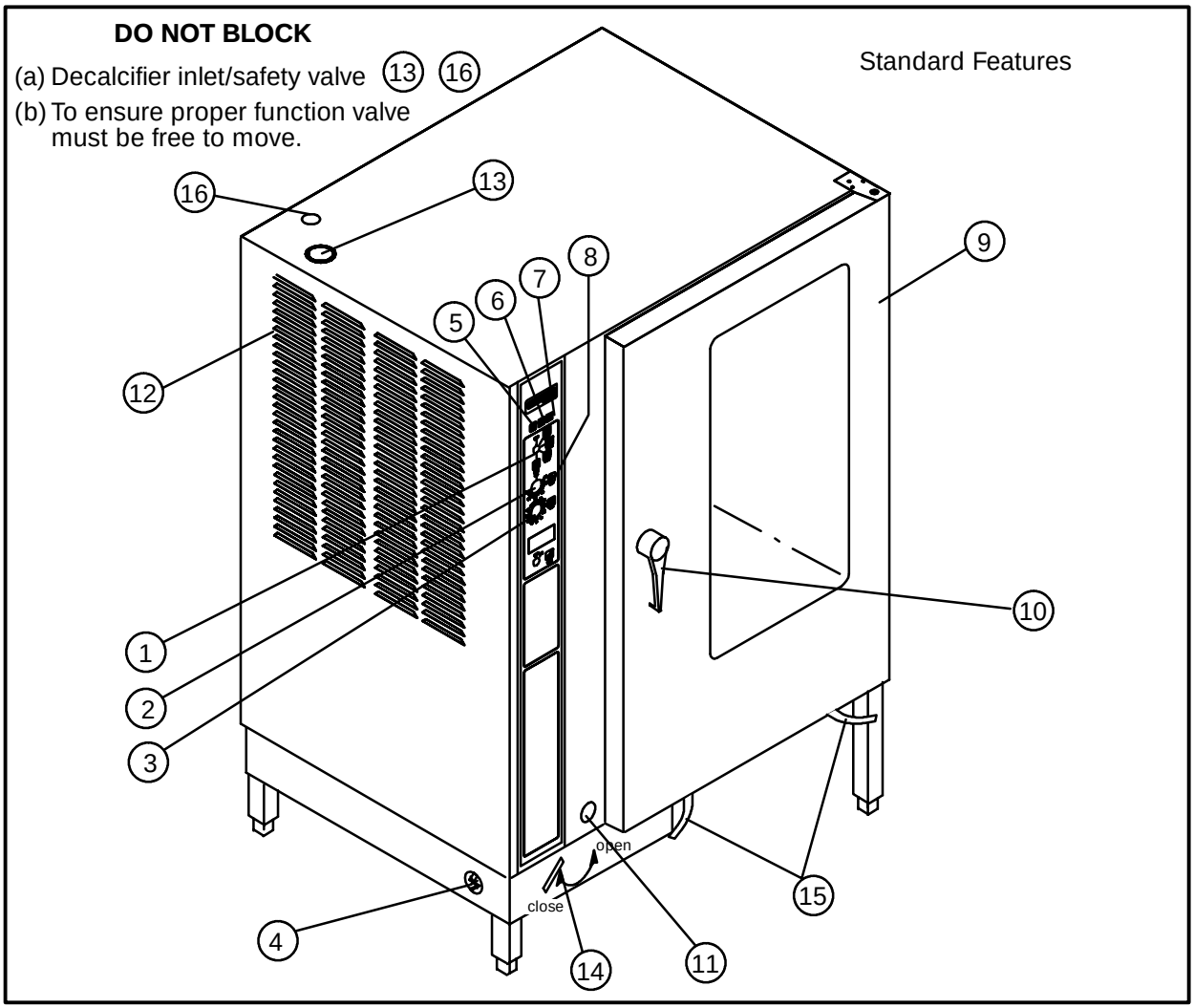


Figure 2

1 Oven Mode Selector Switch
2 Thermostat Dial
3 Timer Dial
4 Power Connection
5 Indicator Lamp (Red)
6 Indicator Lamp (Red) “Low Water”
7 Power “On” Indicator (Green)
8 Heating Indicator (Red)
9 Oven Door
10 Door Handle
11 Door Contact Switch (located behind door)
12 Vent
13 Decalcifying Inlet Safety Valve
14 Drain Lever
15 Transport Cart Guide
16 Air Vent

Installation

Owner's Responsibilities

Installation responsibilities prior to service startup inspection

You are entitled to a free start-up inspection service by our factory ASAP. Before a factory representative arrives to perform a startup procedure, the owner must already have satisfied the following requirements.

1. Oven(s) are uncrated, stacked (if applies) and put in place.

   NOTE: Please refer to Leg Attachment and Stacking Addendum.

2. The owner/operator must have the following plumbing and electrical requirements met and installed.

   NOTE: An atmospheric drain kit and water pressure regulator are provided with the equipment, failure to utilize this installation kit (or equipment) will void warranty.

Five to seven working days are needed to schedule a startup inspection service.

PLUMBING	
Water	
Building Water Pressure (min/max)	40 PSI min / 60 PSI max
Water Connection	3/4" Hose Fitting
Water Regulator Setting	35 PSI
Drainage	Atmospheric Vented Drain
Drain Connection	2" Copper
Avg Water Drain Temp.	Approximately 122_F (50_C)

ELECTRICAL															
	COS-6			**COS-101**			**COS-101S**			**COS-201**			**COS-20**		
	9.4kw			**18.4kw**			**18.4kw**			**36.6kw**			**61kw**		
Amp/Line (max)															
	Volt	**3Φ**	**1Φ**	**Volt**	**3Φ**	**1Φ**	**Volt**	**3Φ**	**1Φ**	**Volt**	**3Φ**	**1Φ**	**Volt**	**3Φ**	**1Φ**
	208	26	N/A	208	52	N/A	208	52	N/A	208	102	N/A	208	170	N/A
	240	23	40	240	45	77	240	45	77	240	88	153	240	147	N/A
							440	N/A	N/A	440	48	N/A	440	80	N/A
				480	23	N/A	480	23	N/A	480	44	N/A	480	74	N/A
By Mode															
Steam	9kw			18kw			18kw			36kw			45kw		
Hot Air	9kw			18kw			18kw			36kw			60kw		
Combi	9kw			18kw			18kw			36kw			60kw		
Blower Motor															
	.33 HP/0.4kw			.33 HP/0.4kw			.33 HP/0.4kw			.66 HP/0.8kw			.66 HP/0.8kw		

Owner's Responsibilities

THE INSTALLATION INSTRUCTIONS CONTAINED HEREIN ARE FOR THE USE OF QUALIFIED INSTALLATION AND SERVICE PERSONNEL ONLY. INSTALLATION OR SERVICE BY OTHER THAN QUALIFIED PERSONNEL MAY RESULT IN DAMAGE TO THE OVEN AND/OR INJURY TO THE OPERATOR.

Qualified installation personnel are individuals, a firm, a corporation, or a company which either in person or through a representative are engaged in, and responsible for:

- the installation of electrical wiring from the electric meter, main control box or service outlet to the electric appliance.

Qualified installation personnel must be experienced in such work, familiar with all precautions required, and have complied with all requirements of state or local authorities having jurisdiction.

U.S. and Canadian installations

All ovens, when installed, must be electrically grounded in accordance with local codes, or in the absence of local codes, with the *National Electrical Code, ANSI/NFPA 70 – Latest Edition and/or Canadian National Electric Code C22.2* as applicable.

General export installations

Installation must conform with Local and National installation standards. Local installation codes and/or requirements may vary. If you have any questions regarding the proper installation and/or operation of your Blodgett Combi-Oven/Steamer, please contact your local distributor. If you do not have a local distributor, please call Blodgett Combi at 0011-802-860-3700.

Installation

Oven Placement

OVEN LEVELING

All Units

Place the Oven/Steamer on a level and solid floor. Sloping or uneven floors can cause the unit to function improperly.

Minor uneveness of the floor can be corrected by adjusting the metal leg feet. The maximum adjustment of the leg is 1-3/8".

COS-20 and COS-201

Uneven floors may create difficulty inserting and removing the transport cart.

It is important to level the oven to the transport cart. This ensures that the cart seals to the front of the oven.

When the transport cart is not entirely beneath the unit, be sure the right front cart bracket touches the bottom of the door. This will prevent tearing of the door gasket.

COS-6, COS-101 and COS-101S

We recommend a Blodgett Combi floor stand for the installation of the table model Oven/Steamer.

P/N ACS-31
P/N ACS-18
P/N ACS-22S
P/N ACS-18S

OVEN LOCATION

Follow these guidelines carefully when selecting a location for your Combi-Oven/Steamer.

Left Side

The vents should have adequate air space. According to our agency listings, a minimum of 4" is required on the left side of the unit for operation. However, it is recommended that at least 12" of space be provided between this and other appliances, water, heat source, walls, etc. for servicing. Grease or heat sources should not be located near the air vents on the left side of the unit. Consult the factory for an optional protective side heat shield.

COS-6	P/N R9047
COS-101	P/N R9048
COS-101S	P/N R9068
COS-20	P/N R9050
COS-201	P/N R9049

Right Side

Position the unit a minimum of 1" from the right wall. DO NOT place within 6" of any heat source on the right side.

Back

The optional hose assembly projects approximately 6" from the back of the oven. Position the unit so that the hose assembly is a minimum of 6" from the rear wall.

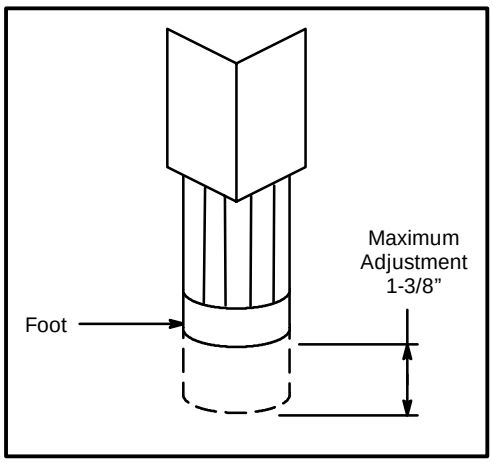
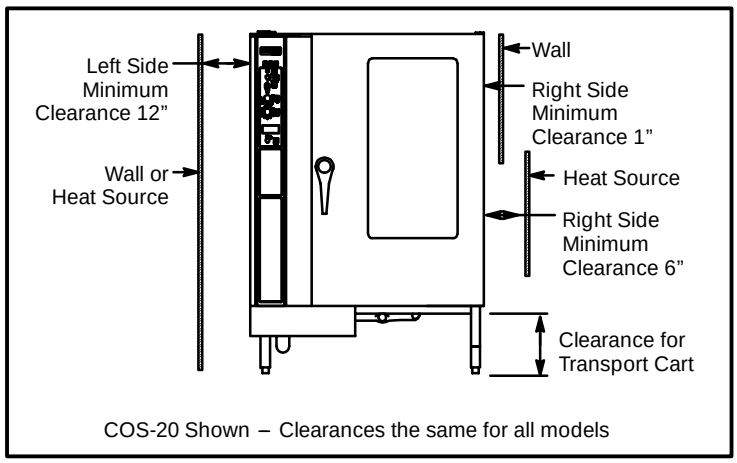


Figure 3



COS-20 Shown – Clearances the same for all models

Figure 4

Plumbing Connections

COLD WATER CONNECTION

Connect the appliance to quality cold water via a pressure hose with 3/4" couplings. A shut off valve is to be provided adjacent to the oven.

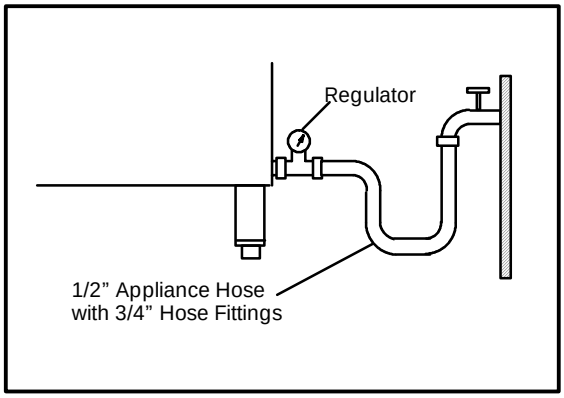


Figure 5

NOTE: Operating the unit without the water regulator installed will invalidate your warranty.

Water must meet the following minimum requirements:

- Total Dissolved Solids (TDS) content will not exceed 30 parts per million.
- Water PH must be 7.0 or higher

WARNING!!

The use of poor quality water will invalidate your warranty.

SPRAY HOSE CONNECTION

Connect the optional spray hose to the fill solenoid as shown.

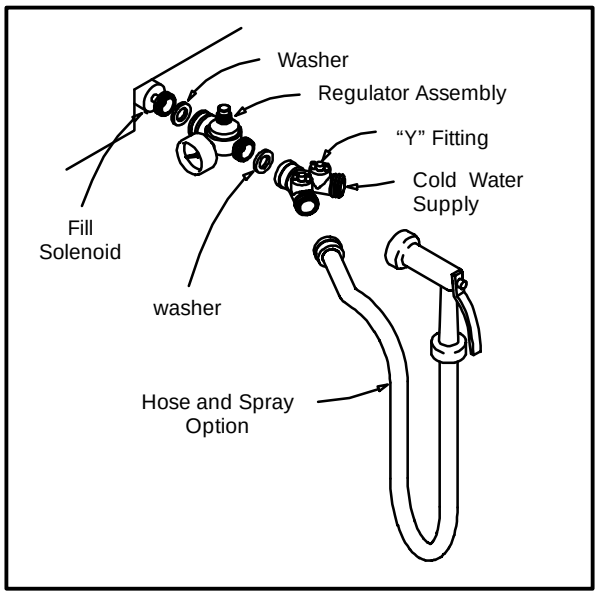


Figure 6

Installation

Plumbing Connections

DRAIN CONNECTION

The Drain Vent assembly, included with the unit, and a 2” pipe with standard drain pitch, should be run to an open drain or connected to a standpipe equipped with a vent. The waste water can also be directed to a nearby floor drain. Flexible hose which allows trapped water to accumulate in sagged runs must be avoided.

Use the following directions to properly connect the drain.

1. Find the drain connection on the lower rear of the unit. See Figure 7.
2. Loosen the coupling clamps, attach to the drain connection and retighten.

NOTE: The open end of the drain should be installed facing the floor. Copper line, used for installation to an open drain or floor sink, must be supplied by the installer.

This drain should be atmospherically vented at the exit of the oven with the vent kit provided.

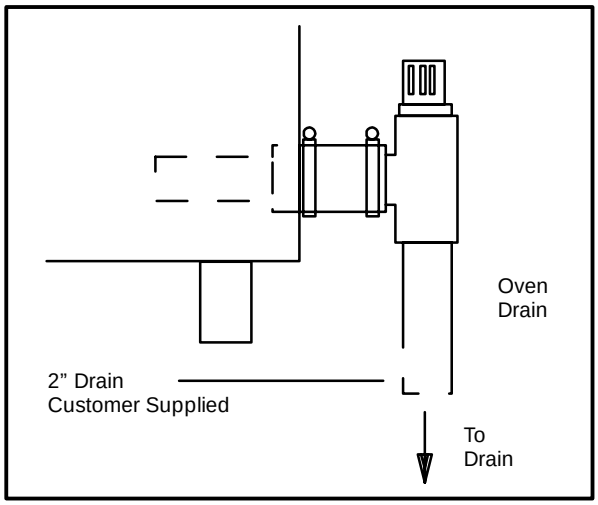


Figure 7

WARNING!!

Use of a trap inline will cause drain back-up.

Electrical Connections

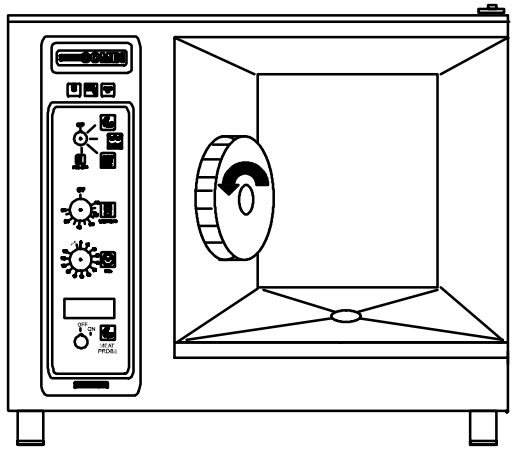
This unit should be installed by a certified electrician only. Before making any electrical connections to these units, check that the power supply is adequate for the voltage, amperage, and phase requirements stated on the rating name plate mounted on the unit. Electrical specifications and circuit diagram can be found behind the cover of the installation cabinet.

All ovens, when installed, must be electrically grounded in accordance with local codes or in the absence of local codes, with the National Electrical Code, ANSI/NFPA 70–Latest Edition and/or Canadian Electrical Code CSA C22.1 as applicable.

Wiring diagrams are located on the inside of the louvered side panel.

NOTE: Disconnect the Power Supply to the unit Before Servicing!

COS-6, COS-101 and COS-101S



Direction Of Fan Rotation

Figure 8

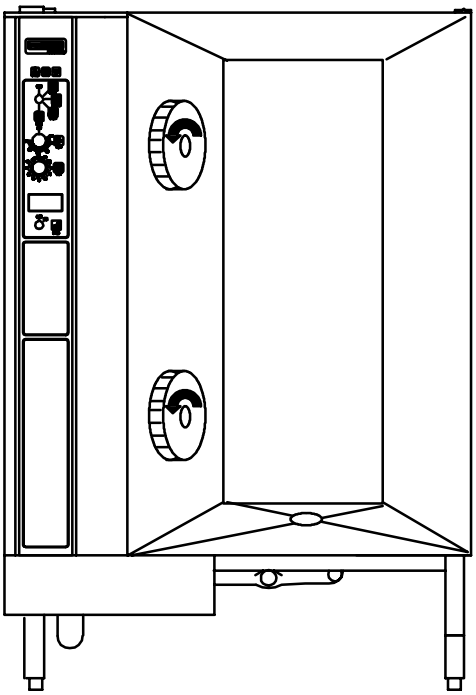
CAUTION! After connecting the appliance, the fans should be checked to ensure the proper rotation (see diagrams below). If the fans turn in the wrong direction, the appliance will not function properly and damage to the unit can occur. Improper connection of the appliance renders the Blodgett Combi warranty invalid.

NOTE: All manual resets should be restored before connecting power to the appliance.

WARNING!!

Improper installation will invalidate your warranty.

COS-20 and COS-201



Direction Of Fan Rotation

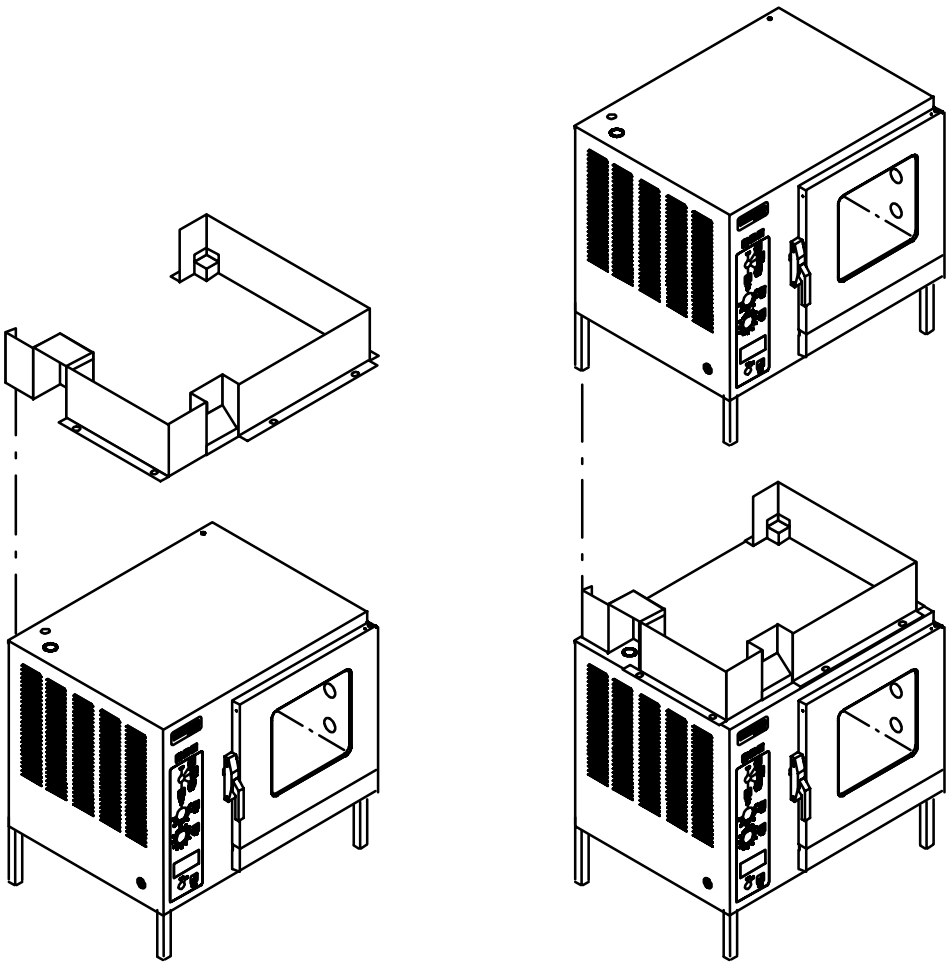
Figure 9

Installation

Stacking – COS-6 and COS-101

TO STACK TWO COS-6'S OR A COS-6 ON A COS-101

1. Attach the stacking spacer (PN R9036) to the top of the lower section using the screws provided.
2. Lower the upper section onto the spacer. The legs of the stand on the upper section will fit into the fittings attached to the stacking spacer.



STEP 1 **STEP 2**

Figure 10

Door Adjustments

COS-6, COS-101 AND COS-101S

The door latch may be adjusted in two directions, in and out, and up and down, using the following procedure:

1. Adjust up and down by loosening the two bolts holding the latch to the face of the unit (A).
2. Make adjustments so that the leading face of the latch is centered in the opening of the handle assembly.
3. Tighten the bolts so that there is no further movement.
4. Adjust in and out by loosening the bolt on top of the latch (B).
5. The adjustment face is stepped so that movement is limited with the bolt tightened properly.
6. The adjustment is correct when the door closes firmly and no steam leaks from the gasket.

The hinges can also be adjusted as follows:

1. Be certain the latch is adjusted properly.
2. Adjust hinges so that the door back and the unit face are parallel (C).
3. The adjustment is correct when no steam leaks through the gasket.

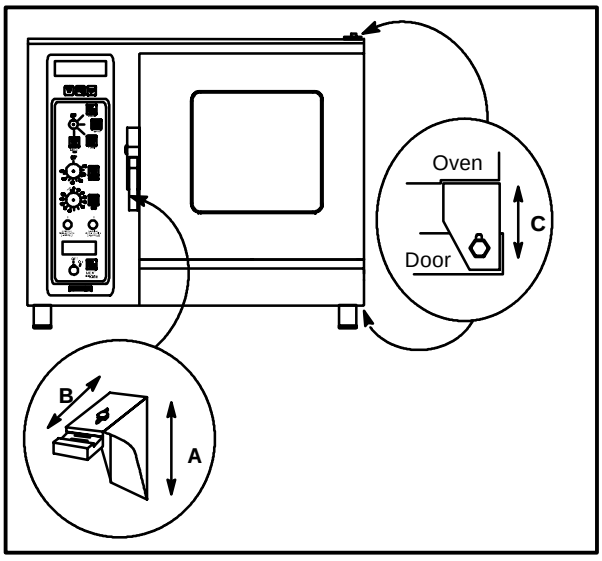


Figure 11

COS-20 AND COS-201

The hinges may be adjusted as follows:

1. Adjust the top hinge plate by loosening the three mounting bolts on the top right corner of the oven.
2. Adjust the bottom hinge pin by loosening the mounting bolt located under the bottom hinge plate on the lower right corner of the oven.
3. Adjust the hinges so that the door back and the unit face are parallel (C).
4. Tighten the bolts so that there is no further movement.
5. The adjustment is correct when the door closes firmly and no steam leaks from the gasket.

The catch can also be adjusted as follows:

1. Adjust the door catch by loosening the four mounting screws located on the inside surface of the oven door.
2. The adjustment is correct when no steam leaks from the gasket.

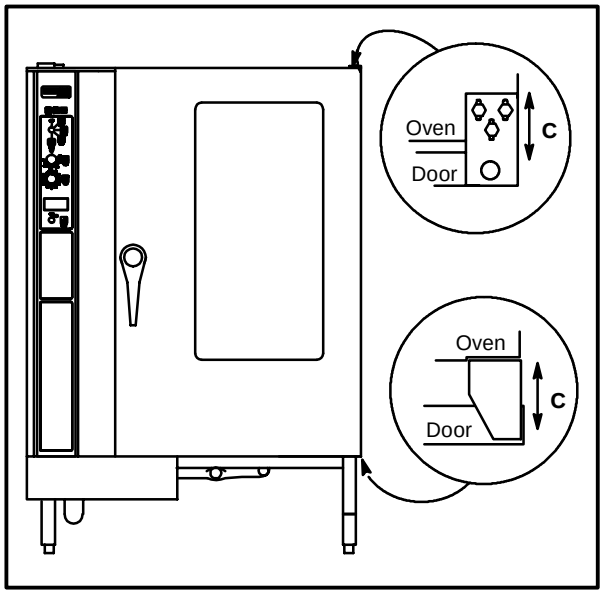


Figure 12

Installation

Final Check

BEFORE SWITCHING THE APPLIANCE ON

Before applying power to the unit for the first time, check for the following conditions:

1. All electrical safety provisions have been adhered to and the electrical connections are correct.
2. The circulation fan(s) should turn counterclockwise: check rotation from inside the oven cavity.
3. Water is connected, turned on and all of the connections are water tight.
4. The grease filter and holder are in their proper positions.

COS-6, COS-101 and COS-101S

1. The pan holders on Models COS-6 and COS-101 are inserted into the oven cavity. Stationary rack guides are provided with Model COS-101S.

COS-20 and COS-201

1. The transport cart on Models COS-20 and COS-201 is inserted into the oven cavity. When the cart is not inserted into the unit, water can spill onto the floor causing it to become slippery. If the door will not close properly, follow the adjustment directions to the right.

WARNING!!

If the fan turns in the wrong direction, the appliance will not function properly and can be damaged.

ELECTRICAL CONTROL COMPARTMENT

Applied voltage to unit voltage/phase suitable for appliance specified.

- j Remove side panel
- j Reset motor protector
- j Set motor protector to automatic
- j Adjust motor protector to maximum
- j Reset high limit thermostat “F3”
- j Check fuses
- j Verify all time delay relay settings
- j Verify proper fan rotation
- j Reinstall side panel

PLUMBING FINAL CHECK

- j Water pressure within 40 PSI (minimum) – 50 PSI (maximum)
- j Atmospheric vented drain in place
- j Water solenoid properly bracketed and not leaking
- j Water feed lines intact without leaks
- j Steam boiler drain lever is working and in closed position
- j Optional Spray Hose connected properly.

Final Check

OVEN OPERATIONAL TESTS

NOTE: Checks to be made by customer or authorized service agent.

Cool Down Mode

- Fan rotation is correct, counter clockwise from inside of the oven
- If incorrect, switch two incoming supply wires

Steam Mode

Turn on STEAM mode and verify (Control Panel Removed):

- Steam Generator flushes and fills
- Check timer operation in all three positions
  1. Set timer to “OFF” position, buzzer should sound
  2. Set timer in position other than “OFF” or “STAY ON”, timer should count down
  3. Set timer in “STAY ON” position, oven should operate continuously without timer
- Run light (power light) turns on
- Verify proper fan rotation
- Unit produces steam, window fogs, door seal does not leak
- Quenching system working

Hot Air Mode

Turn to HOT AIR mode and set thermostat to 400_F (204_C) and verify:

- Heat demand light is on
- Oven is heating properly

Combi Mode

Drain steam generator, close drain, turn to Combi mode, set thermostat to 450_F (232_C) and verify

- Pre-heat thermostat (P3) and thermostat switchover is operational
- Thermostat switchover between hot air and steam is functional

Operation

Standard Controls

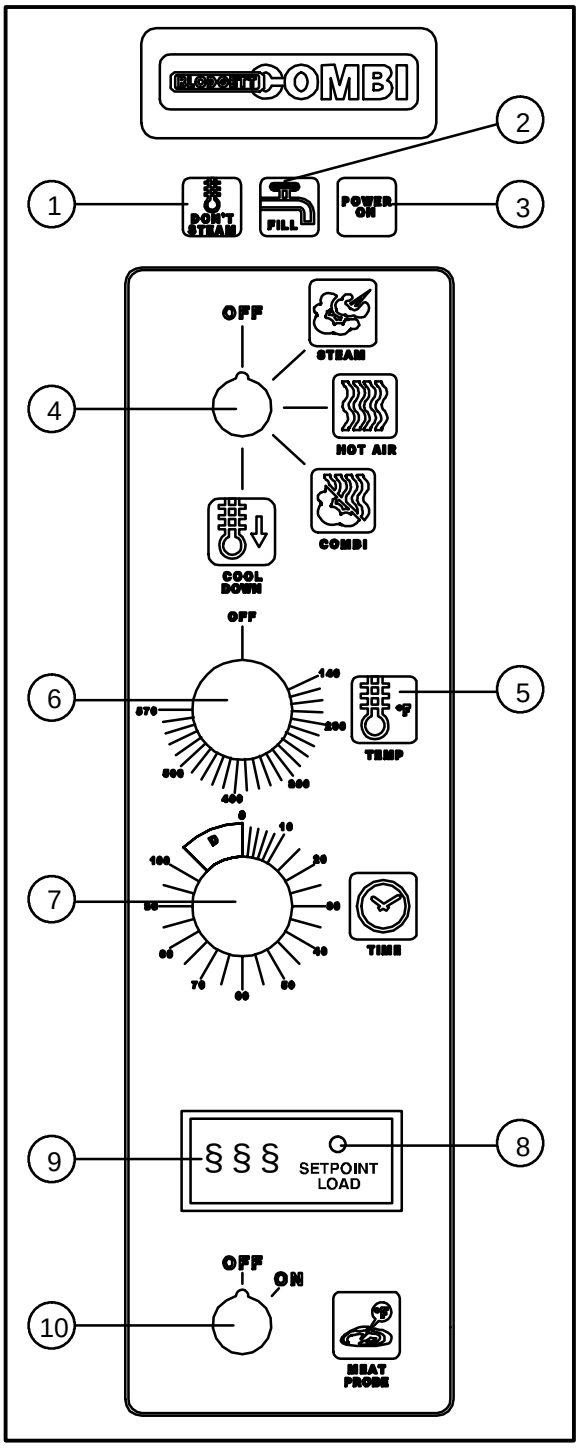


Figure 13

CONTROLS IDENTIFICATION

1. **Indicator Light: Appliance Too Hot, DON'T STEAM**

   This light is on when the STEAM function is turned on and the oven temperature is higher than 230_F (110_C). Cool the appliance by turning the mode selector switch to COOL DOWN mode until the temperature is below 230_F (110_C). This light does not inhibit steam production.

2. **Indicator Light: LOW WATER, FILL**

   This light flashes when the water level in the steam generator is too low. The appliance shuts off automatically in order to avoid damage. In this case, turn on the water tap or check to see if the flow of water is stopped.

3. **Indicator Light: POWER ON**

   Lights up when the appliance is in operation (HOT AIR, STEAM or COMBI).

4. **Mode Selection**

   To turn the appliance on, simply turn the Mode selector switch to the desired function:

5. **Indicator Light: Heating Indicator, TEMP**

   Lights up when the Hot Air heating is in operation and indicates the duration of the heating period. It can also be used for checking temperature as it shuts off when the desired temperature has been reached.

6. **TEMPERATURE Selection Dial**
7. **TIMER 0-100 minutes and "D" for constant operation**
8. **Meat Probe Internal Temperature Switch ***
9. **Meat Probe Temperature Indicator (digital) ***
10. **Meat Probe Selector Dial ***

* Optional (not available on COS-6 models)

Standard Controls

OPERATION

1. Toturn the appliance on, simply turn the Mode Selector Switch (4) to the desired function.
2. The POWER ON Indicator Light (3) will light up.
3. Set the TIMER (7) for the desired cooking time or set it to STAY ON. The buzzer will sound and the unit will shut off when the time has expired.
4. For the HOT AIR and COMBI (Combined Steam and Hot Air) modes, set the THERMOSTAT Dial (6) to the desired temperature. The Heating Indicator (5) will light up and stay lit until the desired temperature is reached. The Thermostat does not operate during STEAM (atmospheric steam has a temperature of approximately 212_F (100_C).
5. The selected mode operates automatically. The temperature, time and mode can be altered at any time during the cooking process. The operation can be stopped by the use of the Mode Selector Switch or by opening the oven door.
6. At the end of the specified time period, the buzzer sounds and the appliance will shut off automatically. Moving the Timer switch to the "D" position stops the buzzer and restarts the unit to run continuously.
7. To cool down the oven cavity,switch the Mode Selector Switch to COOL-DOWN. In COOL-DOWN mode, neither the Thermostat Dial or the Timer will be operational. The blower will function with the door open or closed.
8. The Mode Selector Switch is also the Main Power Switch. In the OFF position the appliance is not operational.

NOTE: Always disconnect the power supply before servicing the unit.

Preheating for the STEAM function

Before the first use of the appliance, daily or after the oven has been idle for 3 hours, preheat with the STEAM function 1-2 minutes until the window is misted over. The appliance can then be loaded. Otherwise, there is no need to preheat for the STEAM function.

Preheating for the HOT AIR function

Always preheat the appliance prior to loading. Open the door and load the product quickly.

Preheating for the COMBI (Steam and Hot Air) function

Same as with HOT AIR function.

OPTIONAL MEAT PROBE

Place the probe through to the middle of the product's thickest section. The probe should not touch any bone, nor should the tip be in a fat pocket; these conditions can cause inaccurate readings.

1. Set the Mode Switch (4) to the desired function: **Steam**, **Hot Air** or **Combi** (buzzer sounds if Timer Dial (7) is on 0).
2. Turn Meat Probe Temperature Switch (10) to on (Buzzer stops).
3. Set the desired core temperature with the Meat Probe's Temperature Selection Switch (8) by depressing the small black knob and turning it to the target internal temperature. Releasing the knob will display the current probe temperature.
4. Set the Timer (7) to "D" to run continuously.
5. The cooking process runs automatically.
6. When the selected core temperature is reached, the buzzer will sound and the appliance shuts off automatically.
7. The temperature and mode can be altered at any time during the process.
8. Shut the appliance off by setting all switches to OFF.

NOTE: In setting the internal temperature, be sure to allow for carry-over cooking after the roast is removed from the oven.

Measuring Temperature With The Probe

Measuring product core temperatures during long roasting periods is very practical. It is especially important for products such as Roast Beef to reach a specific internal temperature.

Operation

The Steam Mode

INFORMATION ABOUT THE STEAM MODE

How steaming works

This mode gently cooks food using non-pressurized steam. Fresh steam is directed into the oven from the generator. It is not necessary to add water to foods during the cooking process.

What can be steamed

Vegetables, side dishes, fish, meat, poultry, diet foods, garnishes, dumplings, casseroles, meat loaf, fruits, desserts and eggs.

How to operate the Steam mode

Simply turn the Mode Selector Switch to the STEAM position and set the Timer.

The advantages of steaming

Steaming is a well-known cooking process frequently used in restaurant and institutional kitchens. With this appliance it is now possible to enjoy the many advantages of steaming, some of which are:

- **Shorter Cooking Times**

  The continuous processing of large amounts of product is no problem and long cooking times are no longer necessary. Even with full loads, relatively shorter cooking time for food is needed.

- **High Quality Foods**

  With the useof steam, valuable taste and aroma are preserved since steamed foods retain their own natural taste. During the steaming process foods retain the nutrients and vitamins which are lost in water during boiling. Therefore, when compared, steamed foods have much better color than foods that have been boiled. Also, by using shallow containers the product is not layered as deeply and mushing is avoided.

- **Vitamin Retention**

  Vitamins are not destroyed. This is due to the shorter cooking times, the use of less or little water and the use of a low temperature; slightly less than 212_F (100_C).

- **Firmness**

  With the use of steam, overcooking is not a problem and firmness can be individually controlled.

- **Simultaneously Steaming Different Foods**

  There is no flavor transfer when cooking with the STEAM mode. For this reason, various types of food with different cooking times can be loaded or removed at any point during the cooking process.

The Steam Mode

TIPS AND PROCEDURES

Containers

Both solid and perforated steam table pans of varying sizes (full, half, and one-third size) may be used in the appliance. Small pans may be placed on wire racks.

Stocks for Sauces

When trays are used for cooking there is usually enough stock collected for making sauces. When using perforated pans, insert a solid pan in the bottom rack to collect the stock.

Seasoning

Since there is no liquid added during the steaming process, season using one of the following methods:

- **Season before cooking:** Sprinkle the spice mixture evenly over the food prior to cooking.
- **Oil seasoning after cooking:** Stir the oil mixture into the product. Steam again for two minutes in some cases.

Blanching and Prep Work

Large amounts of product can be blanched in a short amount of time. Trays should not be filled higher than 3 inches.

The STEAM mode is excellent for preparing vegetables for peeling.

Canning and Preserving

The diameter of the containers must not exceed 4-5 inches when canning.

Thawing

Thawing time is much shorter when using steam and produces higher quality food.

Reheating

The use of steam creates an even distribution of heat, which gives food better taste and retention of nutrients.

Foods are reheated in the trays in which they were cooked. Reheating times vary according to the height and content of the containers.

SAMPLE DISHES

Vegetables

Fresh and frozen vegetables may be steamed together. Frozen vegetables should be loosely scattered on the trays. Perforated trays shorten cooking time, although solid trays may be used.

Cooking times will vary depending on the quality of the vegetables. When steaming fresh vegetables, check the product 3/4 of the way through the cooking period.

Steamed vegetables tend to soften after cooking. Since there is a delay between cooking and serving, it is best not to steam vegetables too soft. This is especially important for foods prepared for transport.

Rice and Potatoes

Rice requires the addition of water for steaming. Remember that the rice continues to swell after cooking; plan your quantities accordingly.

Always cook potatoes in perforated pans. Steam can permeate the potatoes better if they are quartered through the width and not the length.

Eggs

Eggs are inserted onto wire racks, either in the cardboard container or placed into perforated trays (there is no need to puncture them). Cooking eggs with the STEAM function saves work and results in less waste since steamed eggs do not break. Also, the degree of hardness can be controlled exactly. Begin timing when the oven window is misted over.

Fish

Fish can be steamed in trays without using extra stock. Use a 1 inch pan for fresh fish (Fillets). For larger or frozen pieces, use a 2 inch pan.

Poached fish can be prepared with aromatic herbs and vegetables in either solid or perforated pans. Steam without stock.

Shell fish can be steamed in perforated pans. Use a solid pan to catch drippings for stock.

Operation

The Hot Air Mode

INFORMATION ABOUT THE HOT AIR MODE

How cooking with hot air works

Hot air is circulated at high speed on all sides of the product, providing a concentrated cooking process. This function is extremely effective for intensive browning.

What can be cooked with hot air

Hot air can be used for all foods which need a short cooking time and intensive browning. For example: steaks, cutlets, fillets, breaded foods, and various baked foods. This function may also be used for au gratin.

COOKING WITH THE HOT AIR MODE

Temperatures

For intensive browning and crispy crusts, preheat the oven to the maximum temperature of 500_F (260_C). This is especially important when searing.

Performance

The suggested times and temperatures given at the end of this section are based on full capacity. Better results may be obtained by reducing product quantities.

Cooking Times

Due to the constant hot air circulation, this appliance cooks faster than conventional grills and deck ovens.

Cooking times will vary according to the quality, weight, and height of the product.

Trays or Racks?

This is a question of individual choice. Racks have the advantage of browning food on all sides; the underside of tightly packed foods may be lighter when using trays.

TIPS AND PROCEDURES

Loading the Oven

Place like sized product together on one rack. In order to ensure proper air circulation, racks and trays should not be crowded.

Oiling

The quality of some foods, such as steaks and breaded meats, can be enhanced by coating with oil or a paprika oil mixture.

Breaded Foods

The degree of browning is dependent on the amount of raw material in the breading. Oil can be used to intensify the browning. Press the breading firmly but don't overload the oven. Flouring seared foods is not recommended.

Baking

For baking, the Mode selector switch may be set to HOT AIR, STEAM, COMBI or any combination according to the type of product. Steam added to the baking process opens up a wide range of possibilities: such as hard crusts and good shine on certain types of breads. Here are some tips for baking:

- Preheat oven to the baking temperature.
- Baking temperatures can generally be set 50-75_F (20-25_C) lower than with a conventional baking or roasting oven. When in doubt, lower the temperature.
- The baking time can be shorter than with conventional methods.
- Slightly reduce your quantities of mixtures with excessive moisture.
- Use deep trays for light mixtures in order to ensure undisturbed baking. Baking forms should not be higher than 3 inches.
- Cake forms (pans, tins, etc.), should be placed on racks.
- Distribute foods evenly when loading half loads.
- Use every second tier for baking bread, heavy mixtures (yeast doughs, etc.) and well filled forms.

The Combi Mode (Steam and Hot Air)

INFORMATION ABOUT THE COMBI (STEAM AND HOT AIR) MODE

How Combi Mode Works

With this function, the advantages of steam (short cooking time, less shrinkage) and hot air (intensive aroma, appetizing color) are combined. Steam and hot air circulate at high speeds, enveloping the product on all sides and providing an intensive cooking process.

What can be cooked in Combi mode?

All types of roasts, duckling, pork, beef, lamb, meat loaf, ground chuck foods, casseroles, poultry, stuffed vegetables, vegetables au gratin and yeast doughs.

The advantages of Combi mode?

- **Productivity**

  Previously, several different appliances, and multiple procedures, were necessary to combine heat andsteam preparation. Now all of these methods can be used without time wasting interruptions, with one appliance.

- **Less Shrinkage**

  The usual weight loss during roasting in conventional appliances can be reduced by approximately 13% of the original weight.

- **Juiciness and Crunchy Crusts**

  When used at the beginning of the cooking procedure, the searing action of steam instantly closes all pores. This reduces the loss of protein and meat juices. Therefore, products with long roasting times remain juicy. Foods retain their moisture and roasts develop a pleasing color as well as an appetizing crust. Meats have a pronounced roasted taste and burning of the surface is almost impossible.

COOKING IN THE COMBI MODE

The COMBI function can be used for the entire cooking process or for any portion of the cooking procedure you desire.

What do Combi-roasting, Combi-steaming and Combi-baking mean?

We have created these names since both modes, STEAM and HOT AIR, can be applied in any combination as follows:

- Together, as in the COMBI function.
- In sequence

  Example: first STEAM and then HOT AIR.
- Or in sequence and then in combination

  Example: first HOT AIR and then COMBI
  Or conversely: first COMBI and then HOT AIR.
- Or all three functions in sequence

  Example: first STEAM, then HOT AIR, then COMBI.

For additional tips on when to use each of these Combi Modes see the “Summary of Functions” on the following page.

Operation

General Tips and Procedures

USING RACKS

Use racks for roasts needing a longer roasting time, large roasts (pork, veal, beef, venison, lamb), searing, toast, au gratin, (chicken, duck, goose, legs, chops), cooking in containers, thawing, baking in tins, etc. When cooking in racks it is important to turn food products.

USING PANS

- **1 l Deep Steam Table Pan**

  For fried potatoes, hamburgers, au gratin, thawing, meat loaf, meat balls, fried, poached and steamed fish, baked goods, vegetable casseroles, duck and goose.

- **2 l Deep Steam Table Pan**

  For cabbage rolls, stuffed peppers, stews, rice, vegetables, sauerkraut, assorted fruits and compote. Also for collecting stock, preparing sauces, etc.

- **2½ l Deep Perforated Steam Table Pan**

  For vegetables without stock, side dishes (breads) and products with shorter cooking times.

- **4 l Deep Perforated Steam Table Pan**

  For vegetables (blanching spinach for example), potatoes, shelled or unshelled eggs.

- **6 l Deep Perforated Steam Table Pan**

  For potatoes.

COOKING TIMES

The length of the cooking process depends on the quality, weight and thickness of the food product.

TEMPERATURES

Typically, the longer the cooking process, the lower the temperature.

LOADING THE OVEN

To ensure that the product will brown on all sides, do not place foods too close together. Place the grain of meats parallel to the air stream (left to right). This ensures better absorption and shortens the cooking process. Place like sized pieces together on the same rack, smaller pieces cook more quickly.

Place the food in the appropriate pans/trays or distribute it on the racks. Insert racks and trays into the pan rack. It is recommended that the pan rack be loaded outside of the oven when processing large amounts of product. The pan rack for table models is well suited for this purpose; it allows for a higher hourly production and an efficient work sequence.

REMOVING THE PRODUCT

Turn the Mode Selector Switch to OFF before opening the appliance door.

WARNING!!

Open the door slowly after steaming! Hot Steam Will Be Present!

Spray Bottle Operating Procedure

WARNING!!

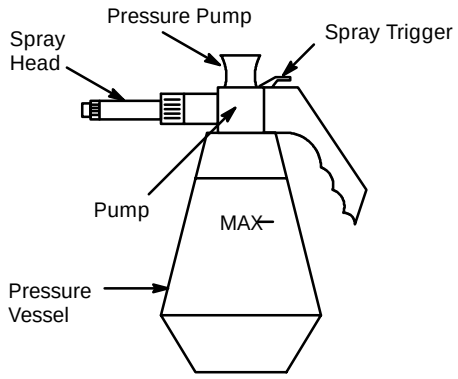
Always disconnect the power supply before servicing or cleaning the unit.

1. Unscrew the sprayer head and fill the container to the MAX mark. Screw the head assembly on firmly to ensure an airtight seal. The liquid must be clean and free from foreign matter. Do not overfill - space must be left for compressing air.
2. To build up pressure, pump approximately 20 full strokes when the container is filled with liquid. The higher the pressure, the finer the spray. If the container is only partially filled, then more pumping is required to compress the additional air space.
3. To spray, depress the trigger with your thumb.
4. After a period of spraying, the pressure will drop. Restore the pressure by operating the air pump.
5. Release pressure after use by inverting the spray head and depressing the trigger or by slowly unscrewing the spray head assembly which will allow air to escape from around the filling aperture.
6. After use, rinse the spray bottle with clean water and check that the hole in the nozzle is perfectly clean and clear. Warm water (not hot) used with a household detergent is a useful cleaning agent for this purpose.

NOTE: Further information can be found in the instruction leaflet supplied with your spray bottle.

WARNING!!

Protective clothing and eyewear should be worn while using cleaning agents.



Clean the pump 2 or 3 times per week with warm water

Figure 14

Maintenance

Cleaning and Preventive Maintenance

CLEANING THE INTERIOR

Daily cleaning of the appliance is essential for sanitation, and to ensure against operational difficulties. Use an oven cleaning detergent in conjunction with the supplied spray bottle.

For difficult cleaning, allow the spray-on oven cleaner to work longer before rinsing.

1. **Cool the oven down** to 140_F (60_C) or, if the oven has been idle, turn the steam mode on for 3 to 4 minutes in order to warm the oven surfaces.
2. Fill the spray bottle and pump air into the container with the pressure pump.
3. Spray the interior of the oven with a cleaning solution.

   NOTE: Never spray water into the unit when the temperature is above 212_F (100_C). NEVER SPRAY WATER IN THE UNIT AFTER USING THE HOT AIR OR COMBI MODES.
4. Let the cleaner work for 10 to 20 minutes with the oven off. For difficult, baked on grease, etc. allow to work over night.
5. Set the timer for 15 to 20 minutes.
6. Set the mode selector switch to Steam. This will soften all burned on residue.
7. Rinse the oven interior with water (a hose may be used, but take care that only the oven's interior cavity is sprayed with water).
8. Set the mode selector to steam for another five minutes to flush out the oven interior and remove all detergent residue.

NOTE: The oven cavity should never be scoured or scraped.

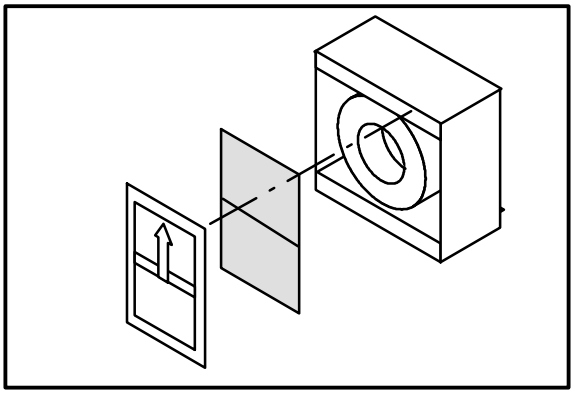
On stainless interiors, deposits of baked on splatter, oil, grease or light discoloration may be removed with a good non toxic industrial stainless steel cleaner. Apply cleaners when the oven is cold and always rub with the grain of the metal. The racks, rack supports and the blower wheel may be cleaned in the oven or by removing them from the oven and soaking them in a solution of ammonia and water.

NOTE: DO NOT use corrosive cleaners on the Oven/Steamer.

CLEANING THE EXTERIOR

Oven exteriors may be cleaned and kept in good condition with a light oil. Saturate a cloth and wipe the oven when it is cold; wipe dry with a clean cloth.

NOTE: The outside of the appliance is not to be sprayed with water.



NOTE: Grease filter and holder must be properly and securely inserted for correct oven operation.

WARNING!!

Always disconnect the power supply before servicing or cleaning the unit.

Decalcification

1. Insert the transport cart into the oven cavity. (COS-20 and COS-201 only)
2. This unit is equipped with a GENERATOR DRAIN VALVE located in the lower left hand corner on the front of the unit. With the appliance *OFF*, open the GENERATOR DRAIN VALVE by moving the DRAIN LEVER (1) to the right. Drain the generator completely.
3. Close the GENERATOR DRAIN VALVE by moving the DRAIN LEVER to the left.
4. Lift the SAFETY VALVE WEIGHT and set to one side, leaving access to the decalcification inlet (2).
5. Fill with water by turning the MODE SWITCH (3) to *STEAM MODE*.
6. Pour concentrated decalcifying solution into the inlet. Follow the decalcifying manufacturer's recommended dilution ratios for the decalcifying solution.

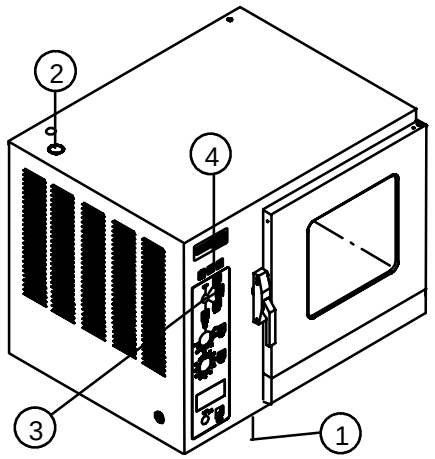
COS-6	1 Quart
COS-101 and COS-101S	1.5 Quarts
COS-20	3.5 Quarts
COS-201	3 Quarts

7. 160-175_F (71-80_C) are the working temperatures for the decalcifier. Allow the water and decalcifier in the steam generator to heat for approximately 1 minute after the LOW WATER INDICATOR (4) goes out. Switch to OFF.
8. Allow the chemicals to work for at least 60 minutes. Overnight is preferred.
9. Drain the generator fully by opening the DRAIN VALVE LEVER. (Swing to the right).
10. Rinse fully by filling and draining the generator. (Generator fills automatically when the unit is in the *STEAM MODE* and the DRAIN VALVE is closed). When the LOW WATER INDICATOR LIGHT goes out, turn the MODE SWITCH to *OFF* and open the DRAIN VALVE by swinging it to the right. Repeat several times for thorough rinsing. Run the unit on *STEAM MODE* for 5 minutes and drain the generator again. Close the DRAIN VALVE.
11. The unit is now ready for normal use.

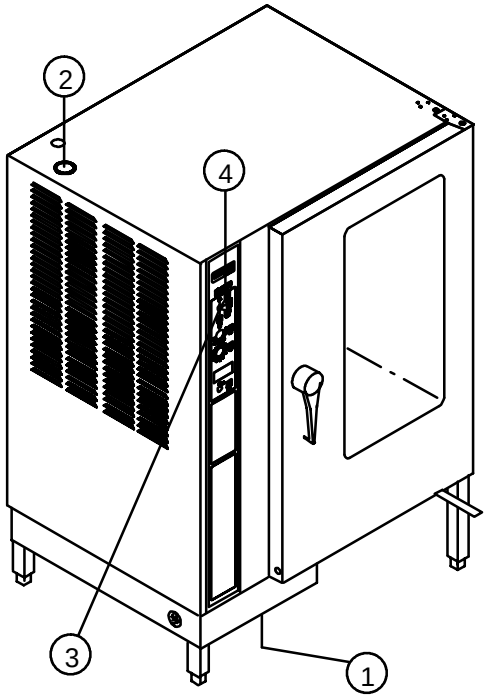
For an accurate measure of the hardness of your water refer to your state water testing agency.

NOTE: The unit should be decalcified weekly.

COS-6, COS-101 and COS-101S



COS-20 and COS-201



* Areas of the country with very hard water may need to decalcify on a more frequent schedule. Consult your service agent or other water hardness authority.

NOTE: Equipment failure due to calcium buildup in the equipment is not covered under the warranty.

Maintenance

Preventative Maintenance

PREVENTIVE MAINTENANCE

The best preventive maintenance measures are the proper initial installation of the equipment and a program for cleaning the oven routinely. The Oven/Steamer requires no lubrication. Contact the factory, the factory representative or a local Blodgett Combi service company to perform maintenence and repairs should they be required.

CHANGING THE LIGHT BULB

When replacing the light bulb always use a new lens gasket. Insert the new bulb with care. See Figure 15.

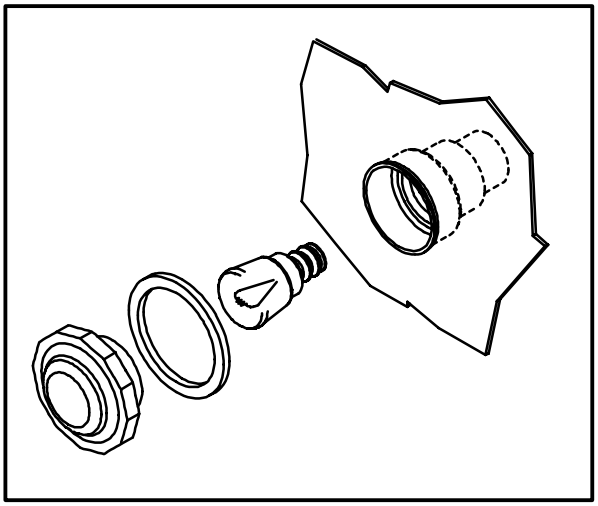


Figure 15

COS-6 Service Schematics

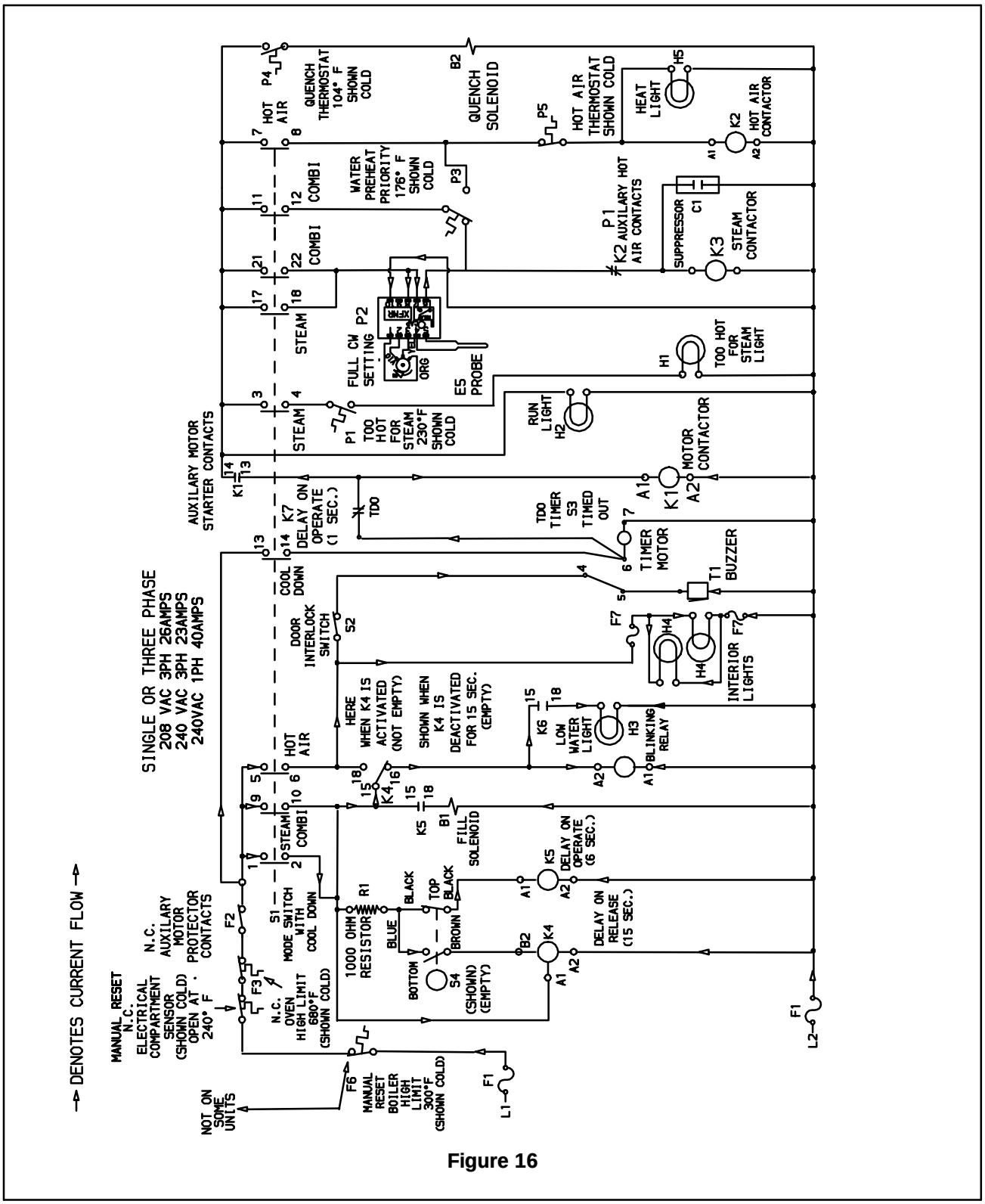


Figure 16

COS-6 Service Schematics

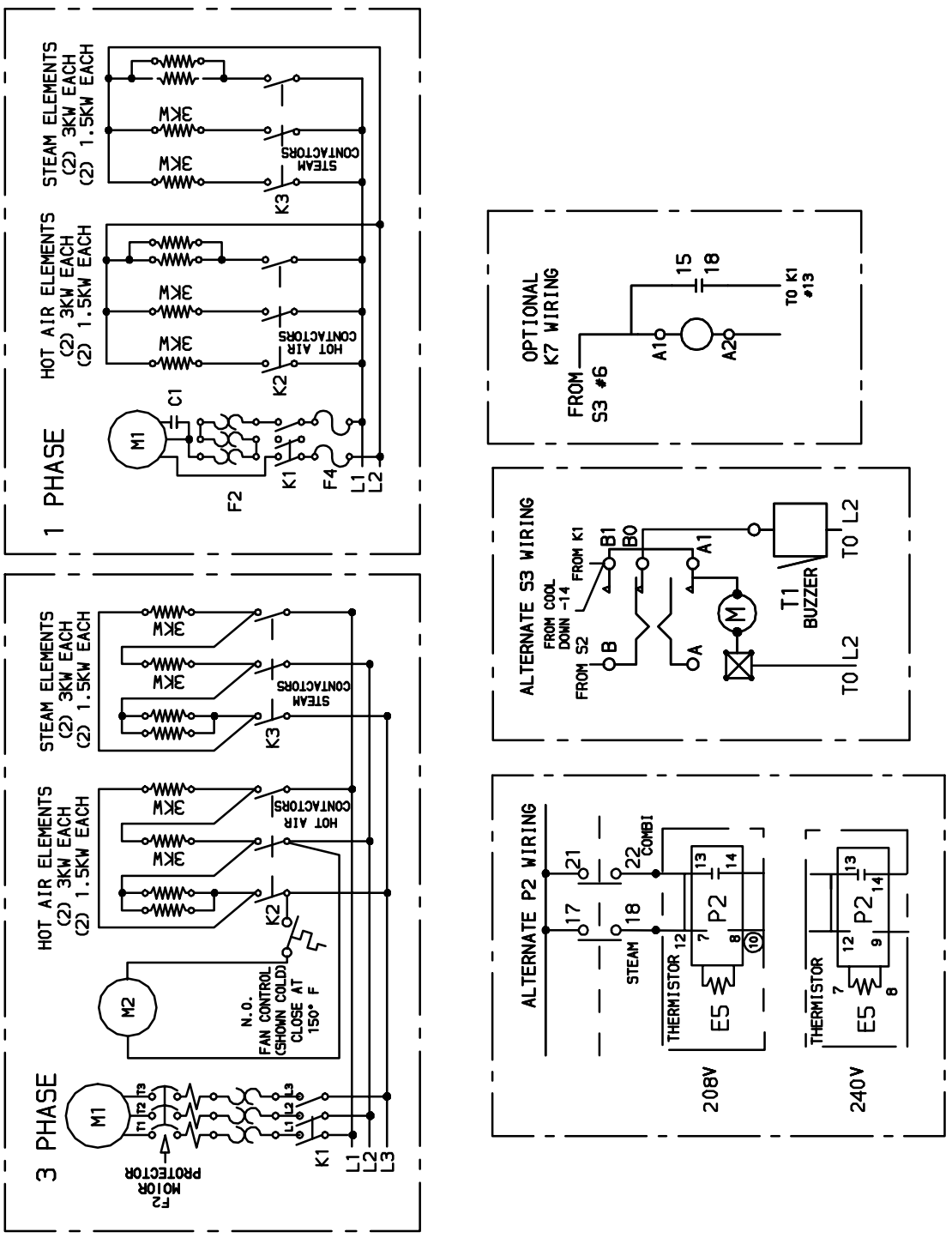


Figure 17

COS-101 and COS-101S Service Schematics

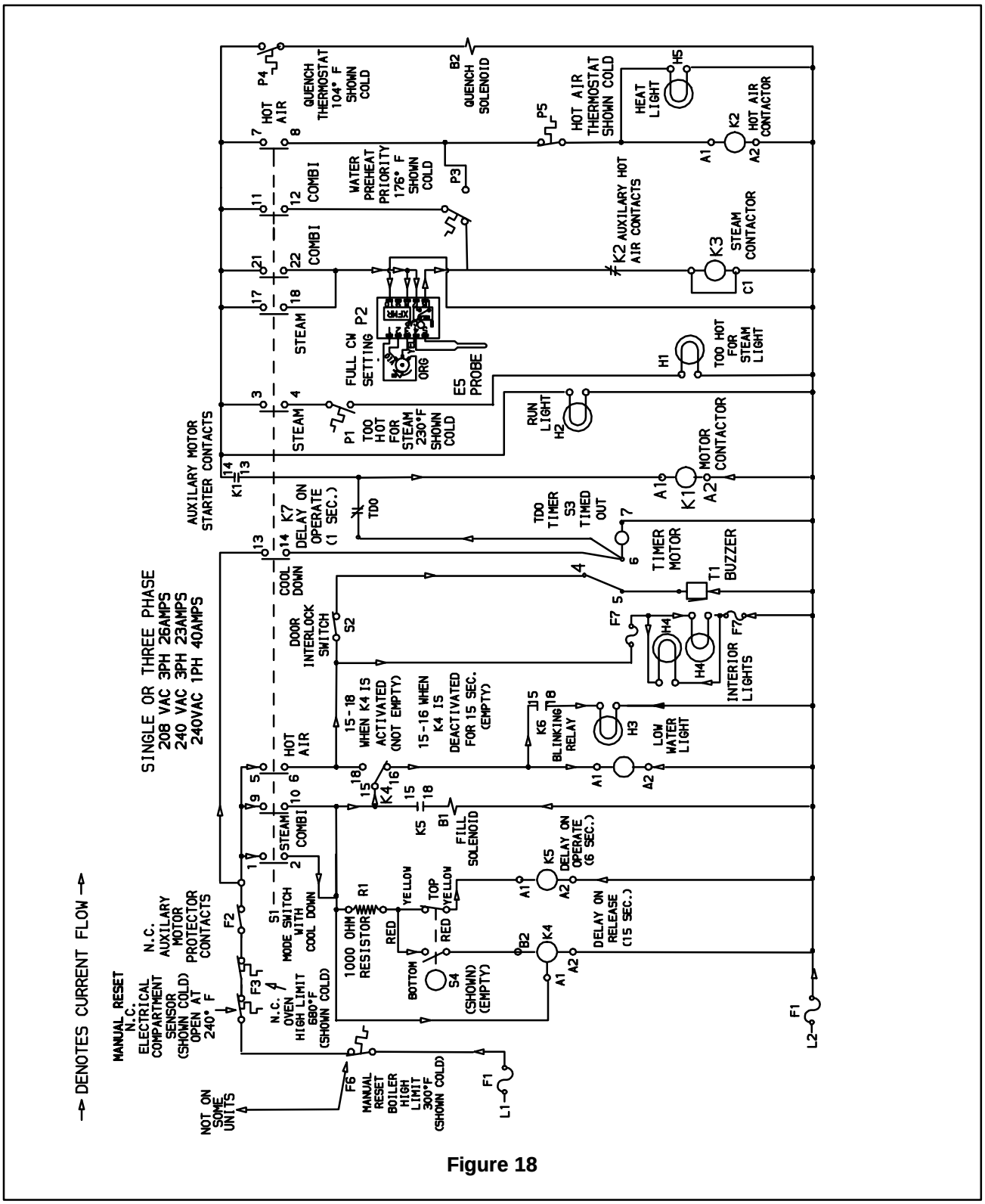


Figure 18

COS-101 and COS-101S Service Schematics

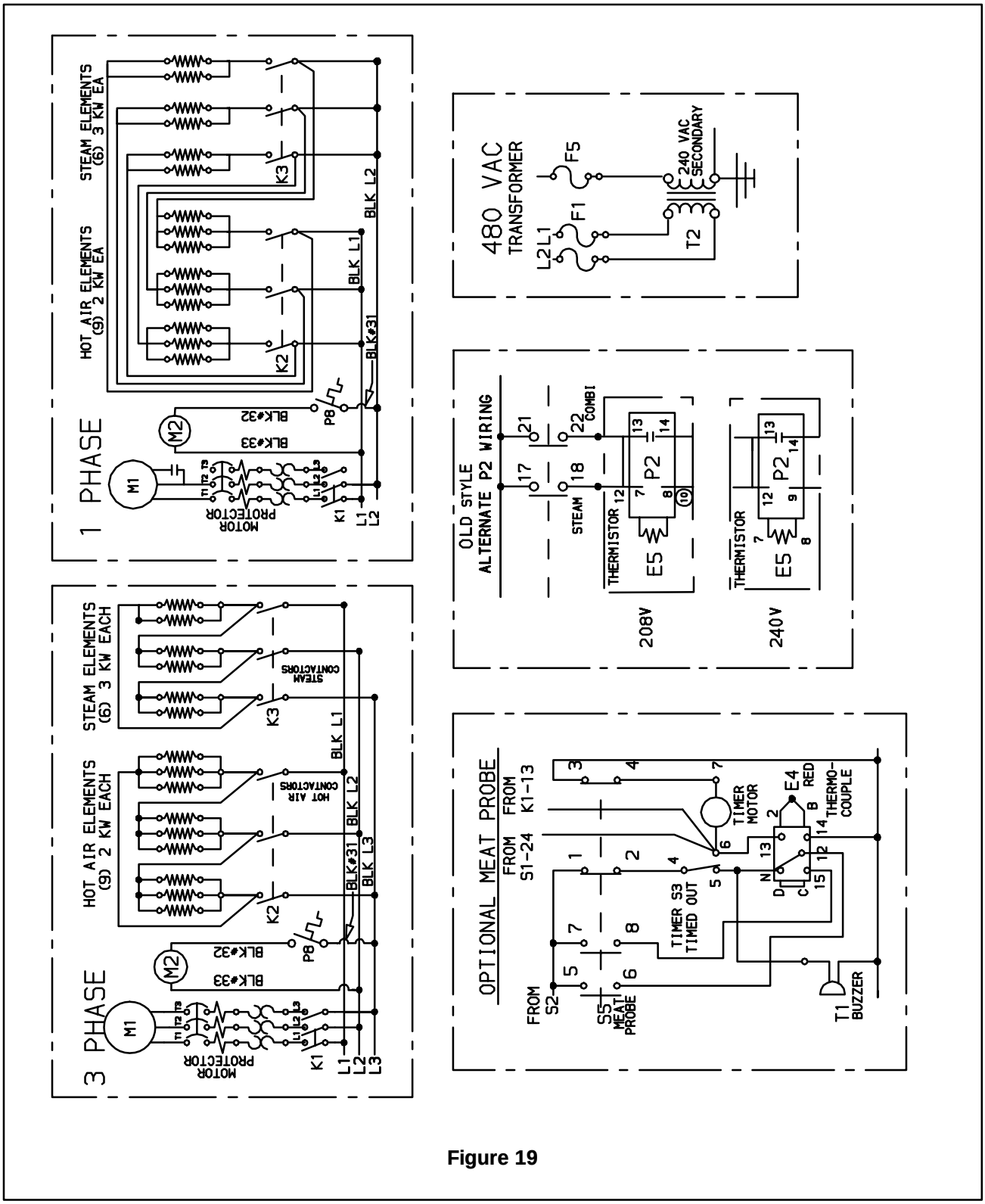


Figure 19

COS-201 Service Schematics

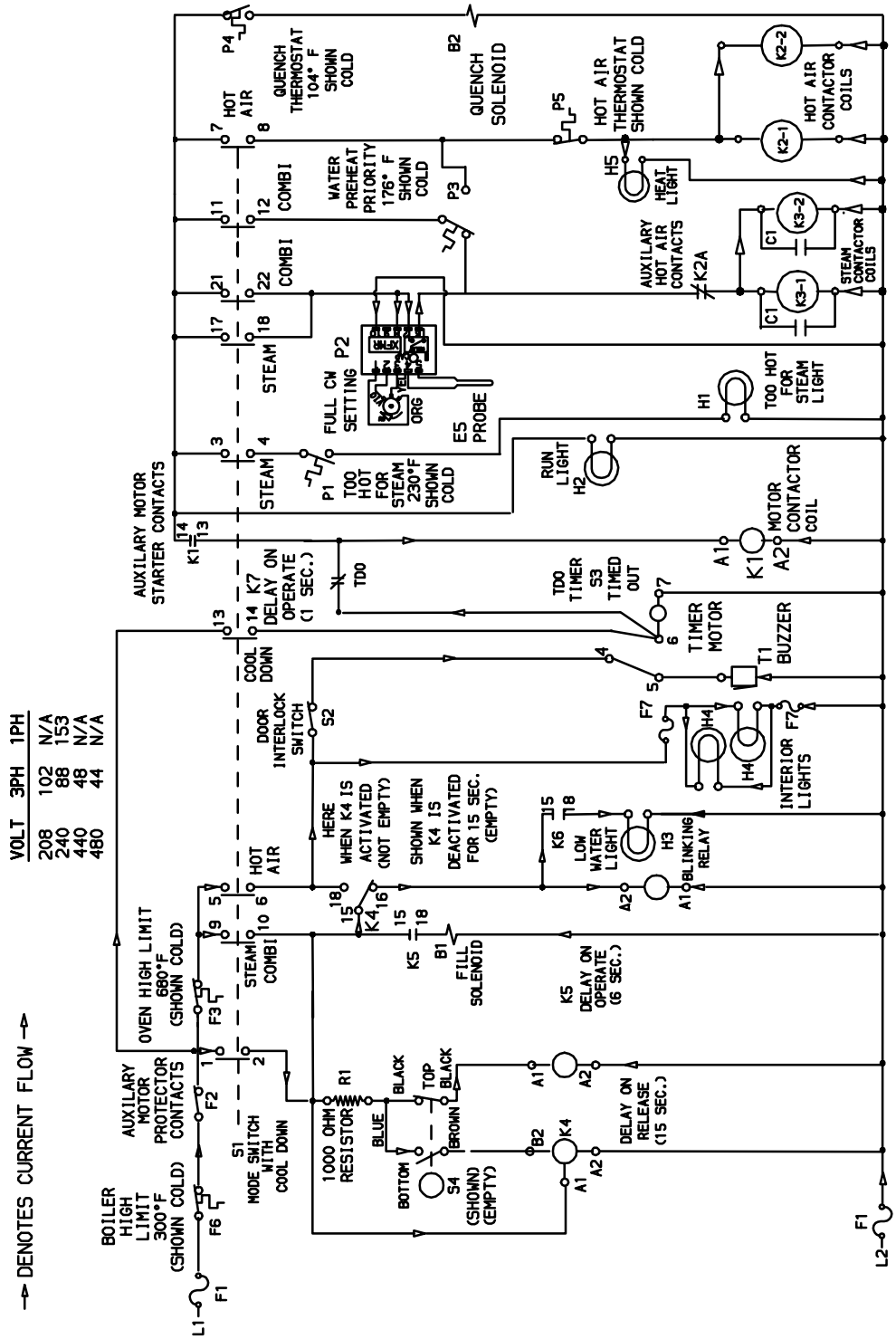


Figure 20

COS-201 Service Schematics

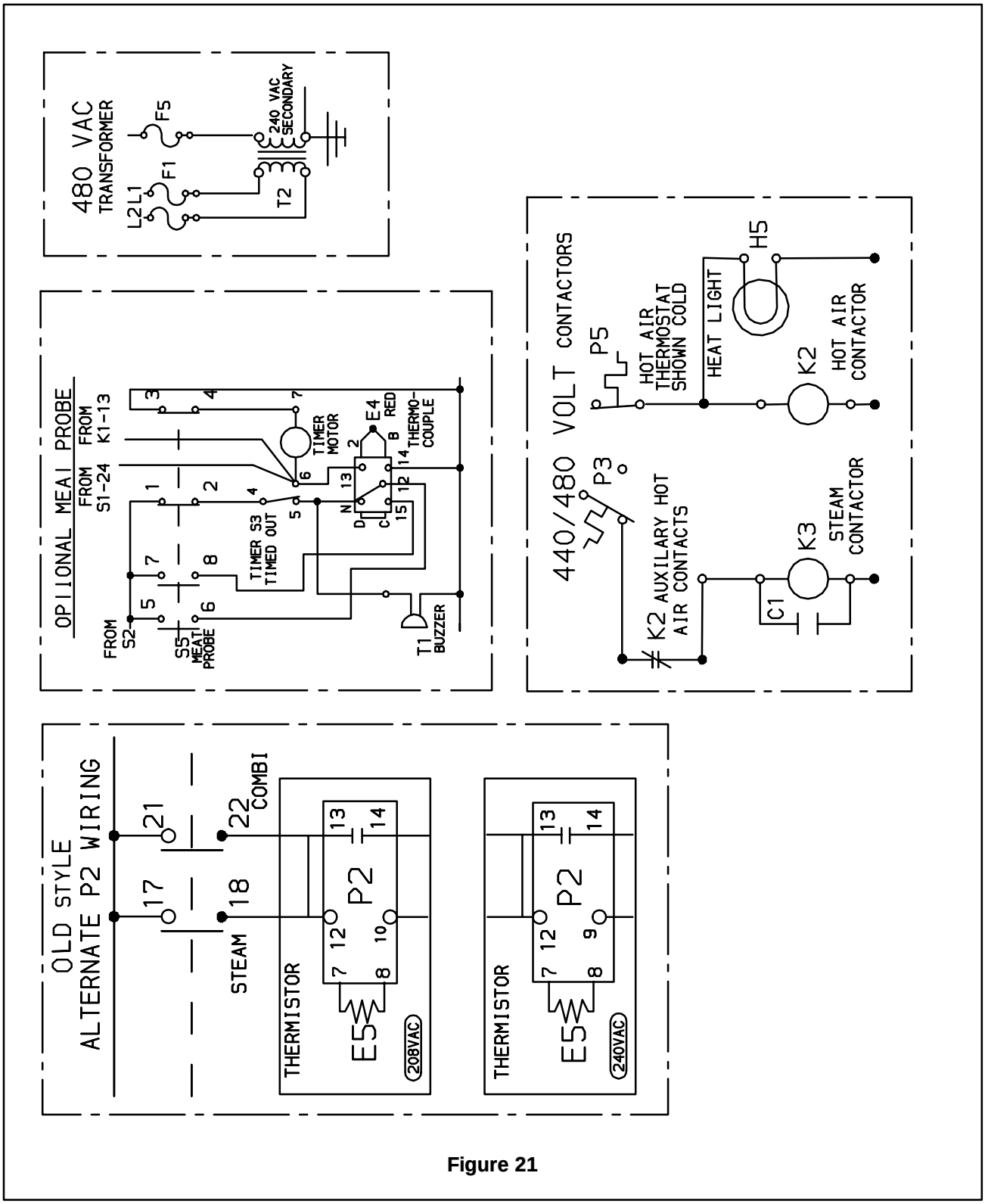


Figure 21

COS-201 Service Schematics

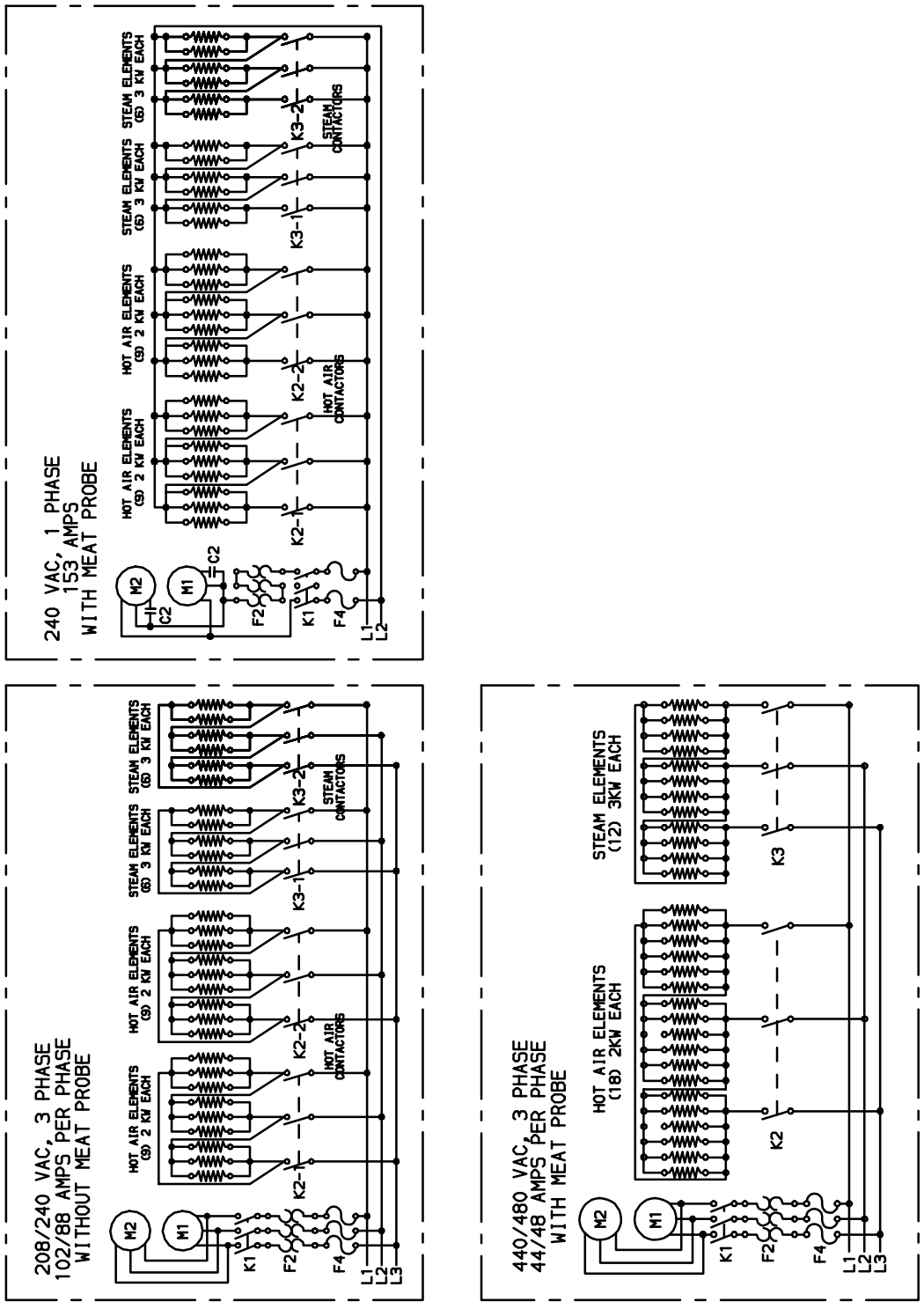


Figure 22

COS-20 Service Schematics

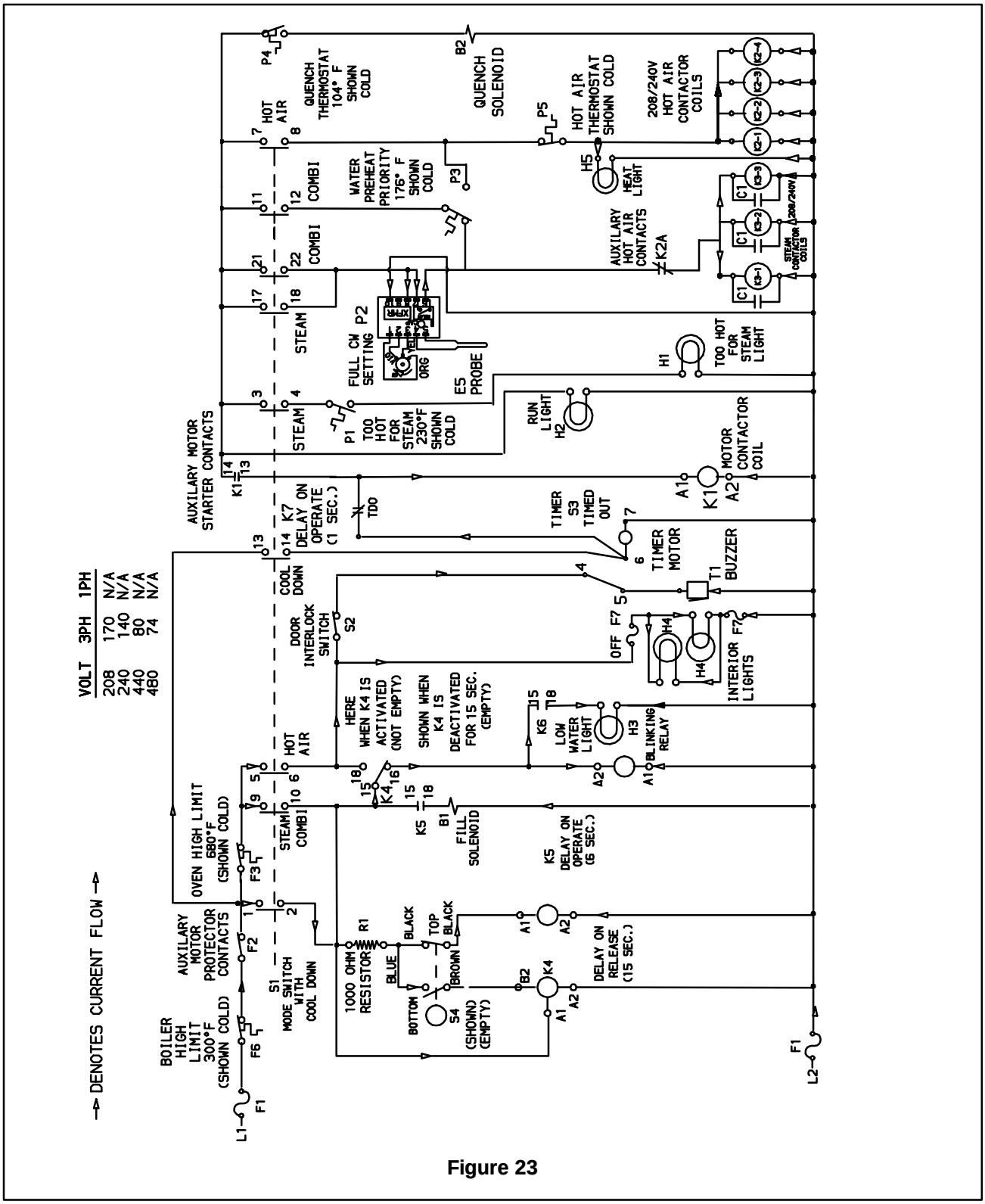


Figure 23

COS-20 Service Schematics

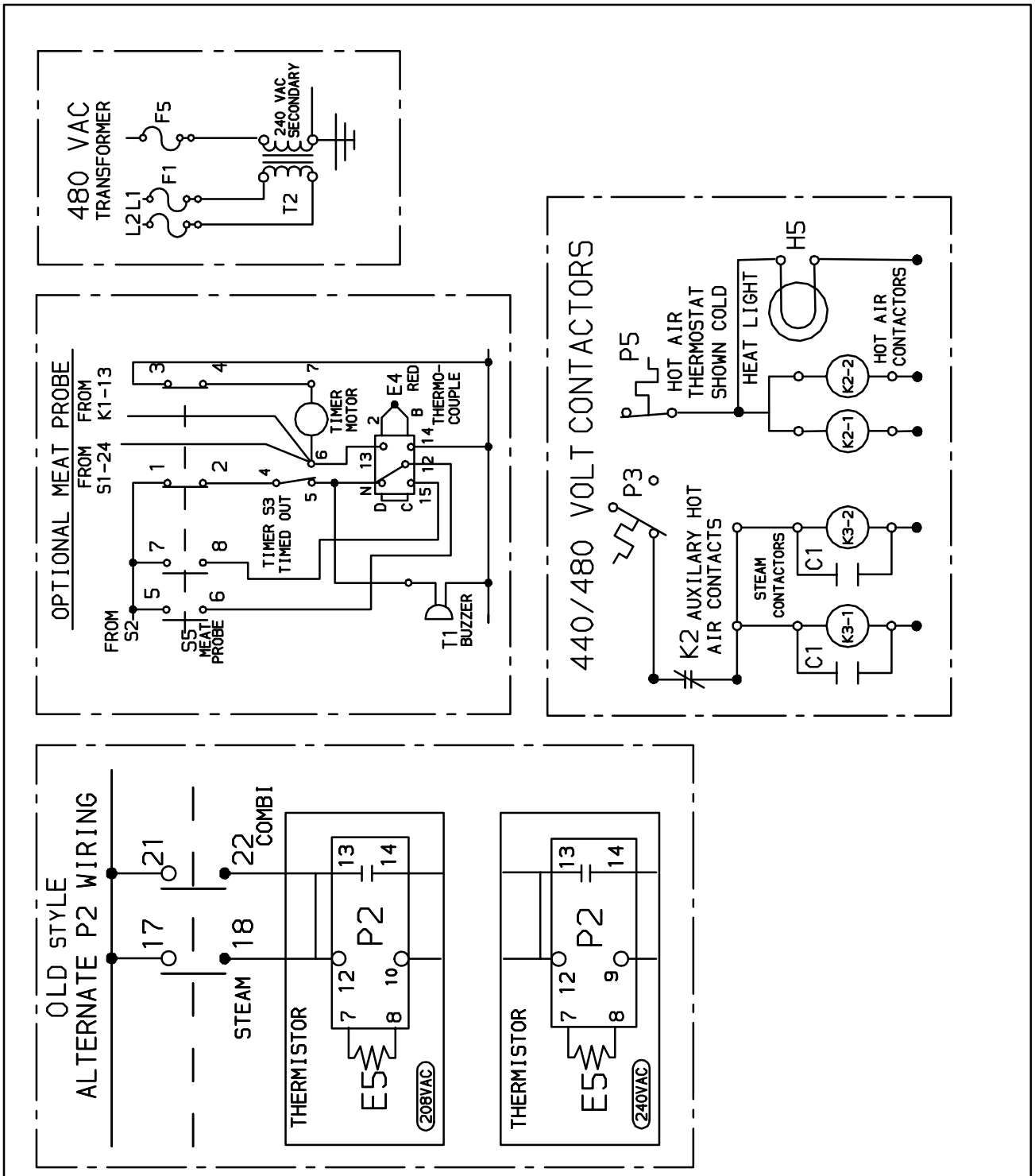


Figure 24

COS-20 Service Schematics

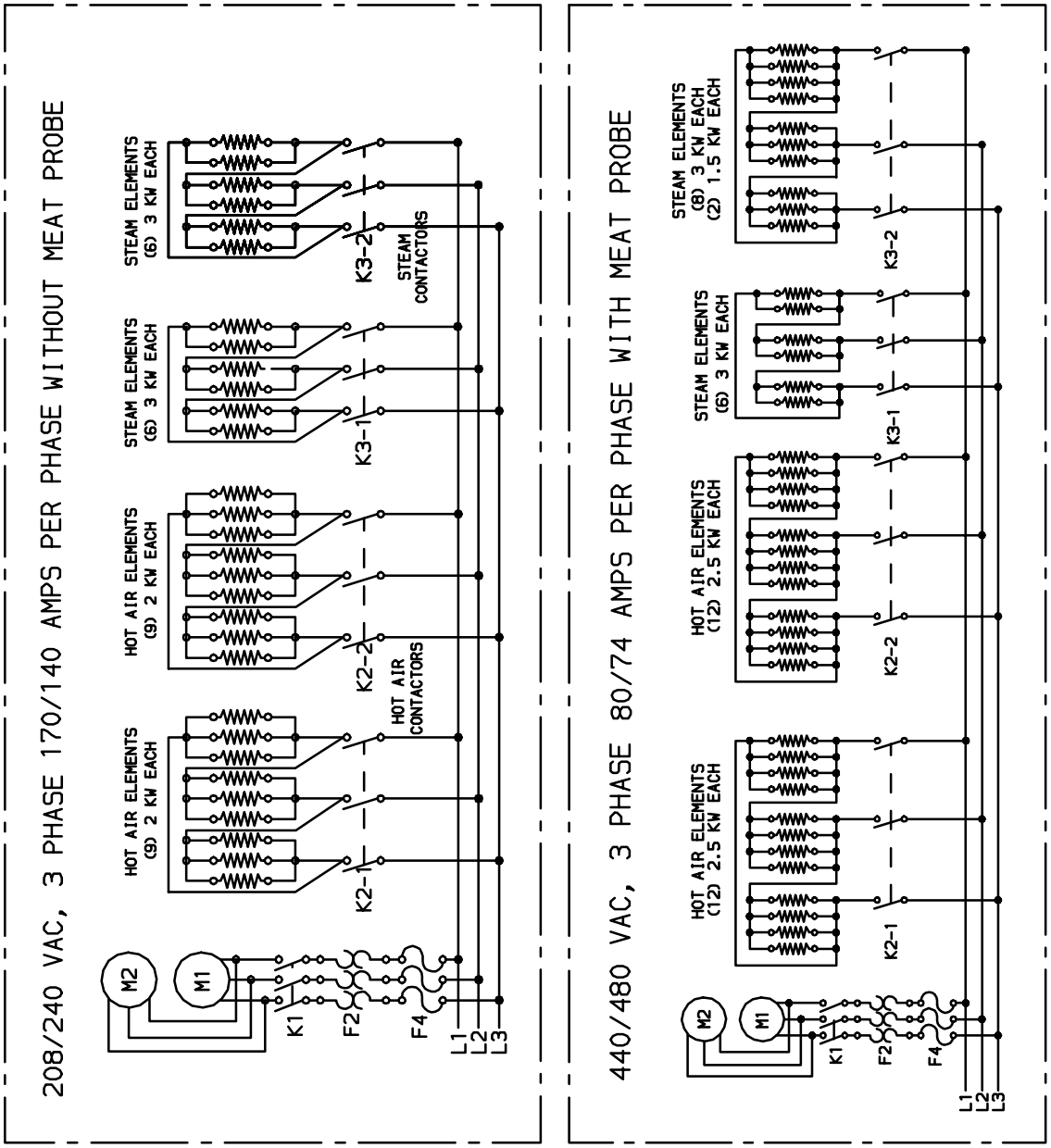


Figure 25

Oven/Steamer Temperature vs. Relative Humidity

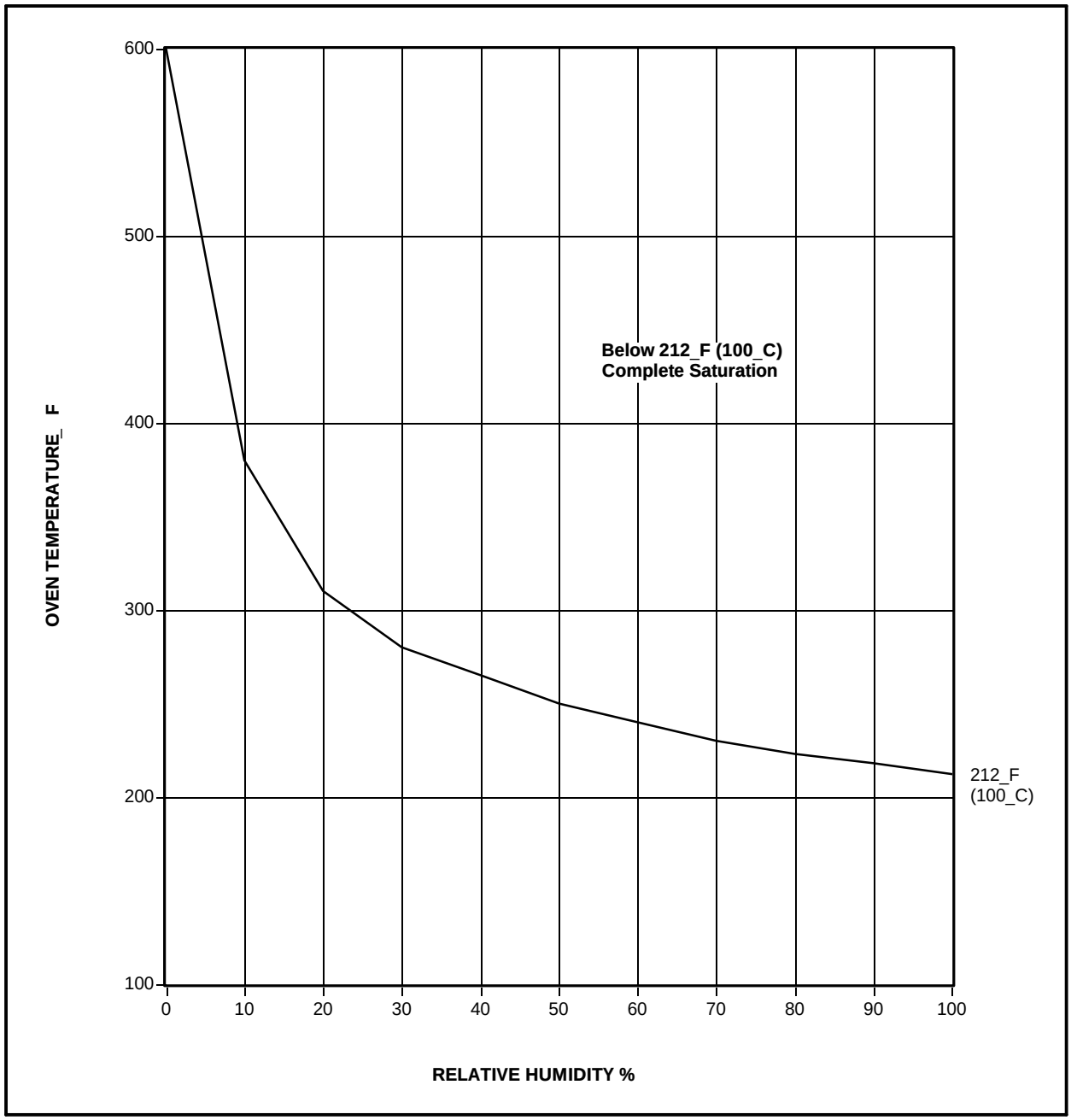


Figure 26

Technical Information

Resistance Chart for Elements

ELEMENT OHM CHART				
Voltage	**1500 W Steam**	**2000 W Hot Air**	**2500 W Hot Air**	**3000 W Steam**
208	28.8	21.6	17.3	14.4
240	38.4	28.8	23.0	19.2
440	129.1	96.8	77.4	64.5
480	153.6	115.2	92.2	76.8

NOTE: Use these figures +/– 5% at room temperature.

Steam Temperature Controller Probe

Temperature	Probe Resistance
70_F (21_C)	35670
78_F (26_C)	29290
90_F (32_C)	22030
120_F (49_C)	11260
150_F (66_C)	6125
190_F (88_C)	2937
200_F (93_C)	2476
210_F (99_C)	2112
250_F (121_C)	1127
300_F (149_C)	567.3
350_F (177_C)	309.1

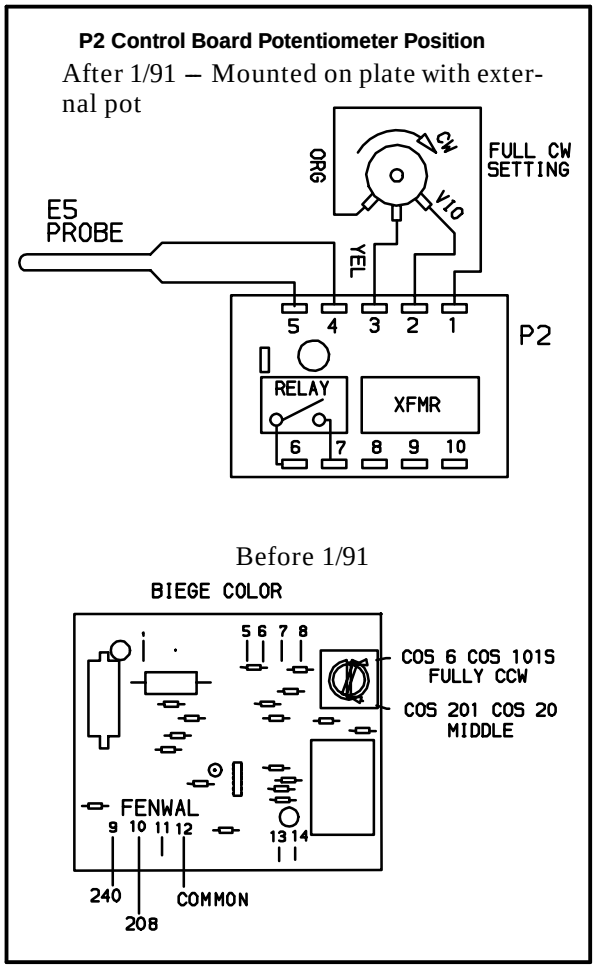


Figure 27

Technical Information

Quenching System

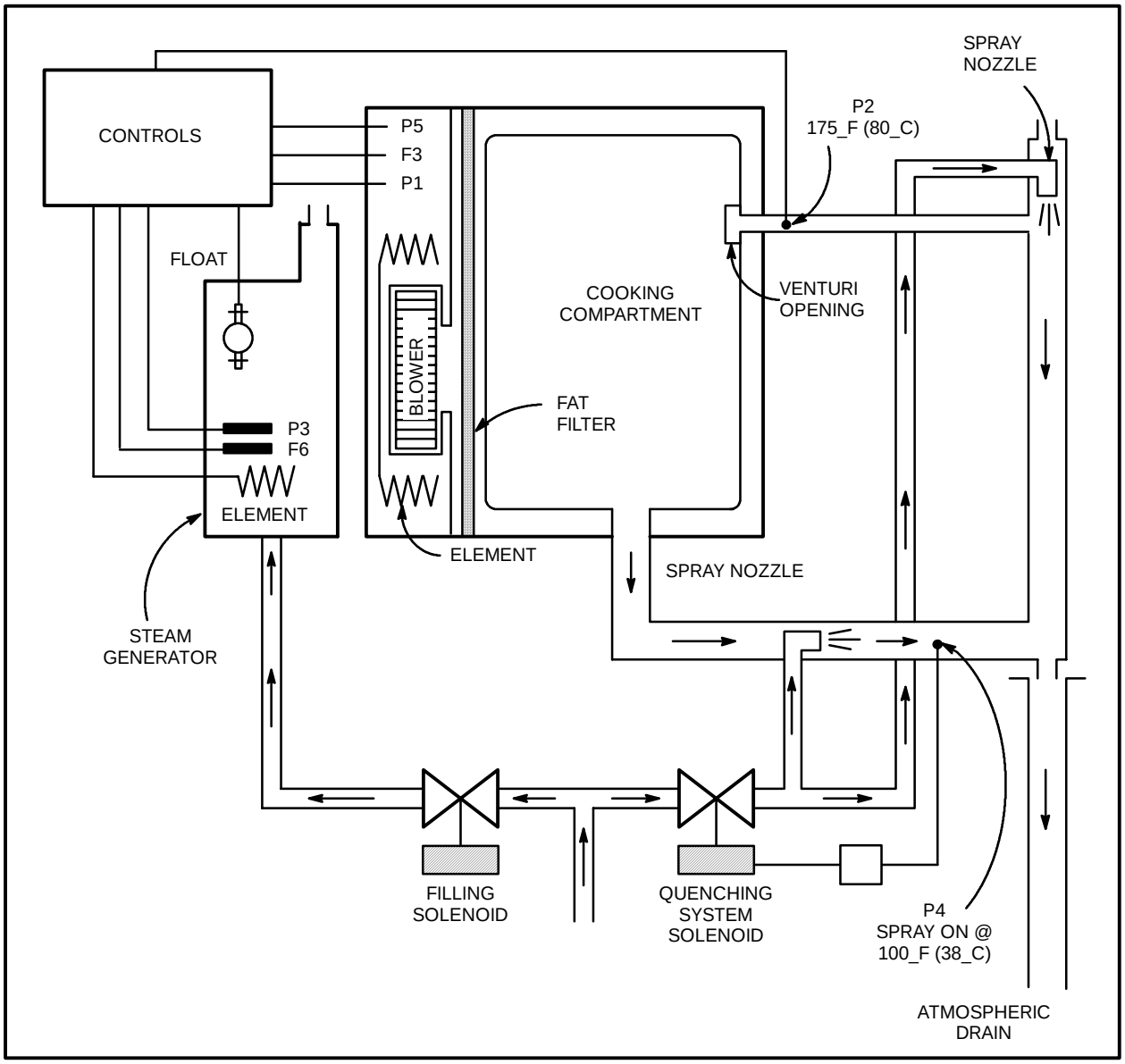


Figure 28

P1 – Too hot for steam cavity thermostat opens @ 150_F (66_C) , closes @230_F (110_C)

P2 – Steam production control

P3 – Steam priority preheat, preheats boiler to 170_F (77_C), then changes state at start of Combi or Steam mode only

P4 – Quench thermostat opens @ 100_F (38_C)

P5 – Hot air cavity thermostat 150-500_F (66-260_C) or 200-500_F (93-260_C)

F3 – Cavity high limit thermostat opens @ 662_F (350_C)

F6 – Boiler high limit opens @ 275_F (135_C)

QUENCHING SYSTEM/NEGATIVE

Steam introduced to cooking compartment condenses on food releasing it's latent heat of condensation. This condensation from gas to liquid causes a slight decrease in compartment pressure contributing to the negative pressure at the Venturi Opening.

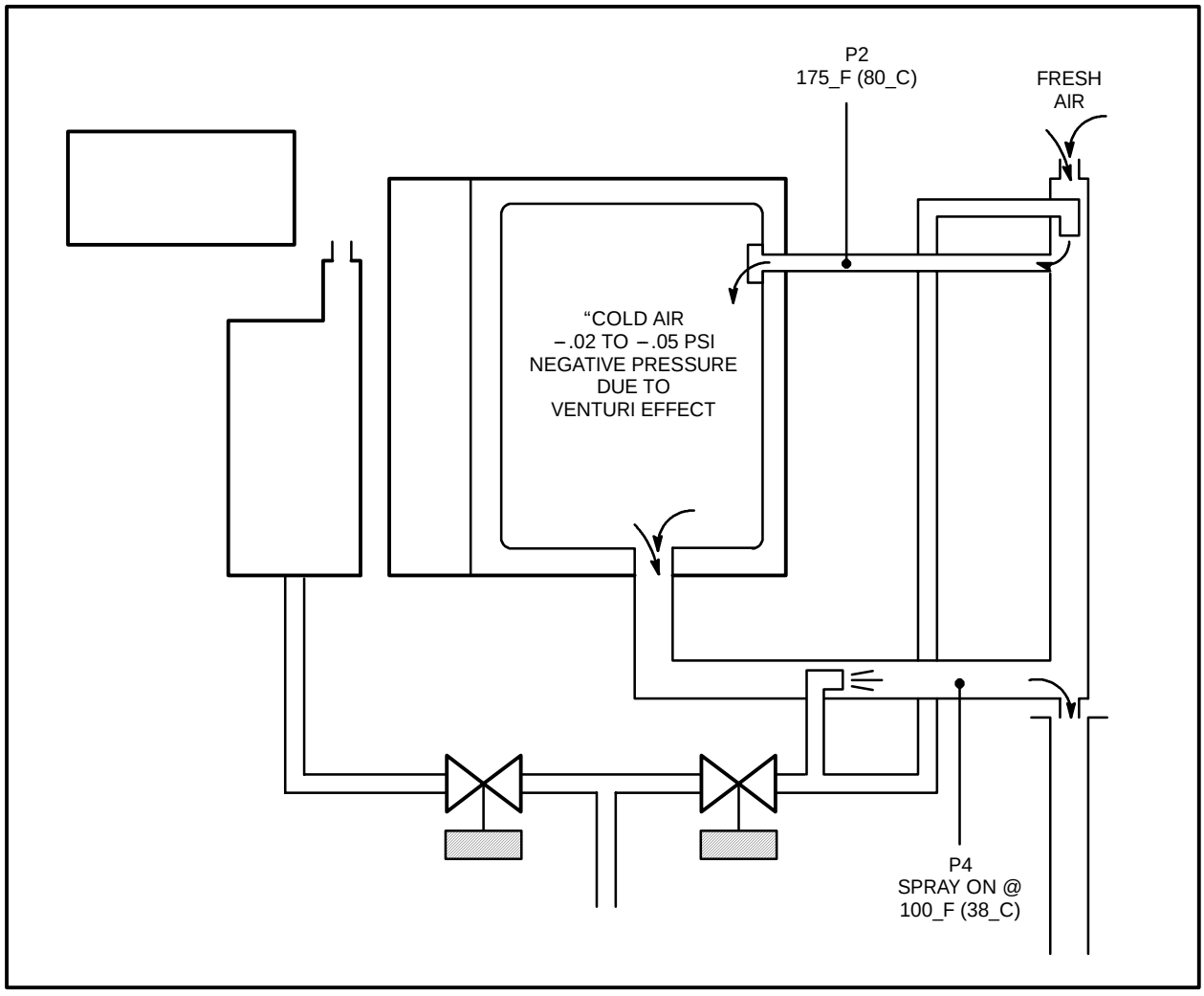


Figure 29

Quenching System

QUENCHING SYSTEM/POSITIVE

When food is warmed condensation is reduced or stopped. Slight positive steam pressure (.08 PSI) builds in cooking compartment, overcoming negative Venturi pressure. P2 thermostat sensed outgoing steam above 175_F (80_C) and shuts off steam generator. P4 thermostat senses outgoing steam in drain about 100_F (38_C) and turns on quenching system.

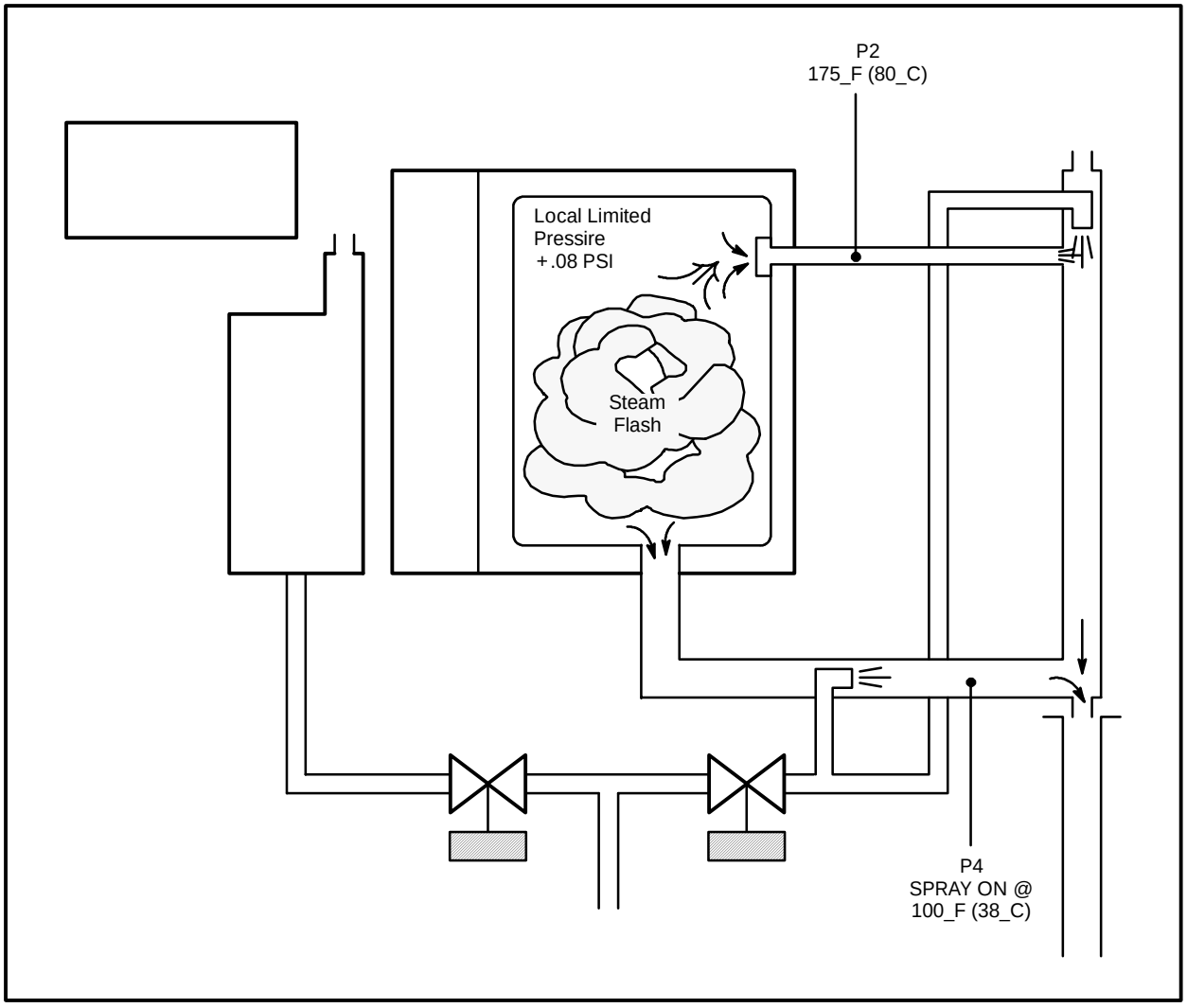


Figure 30

P/N R0153

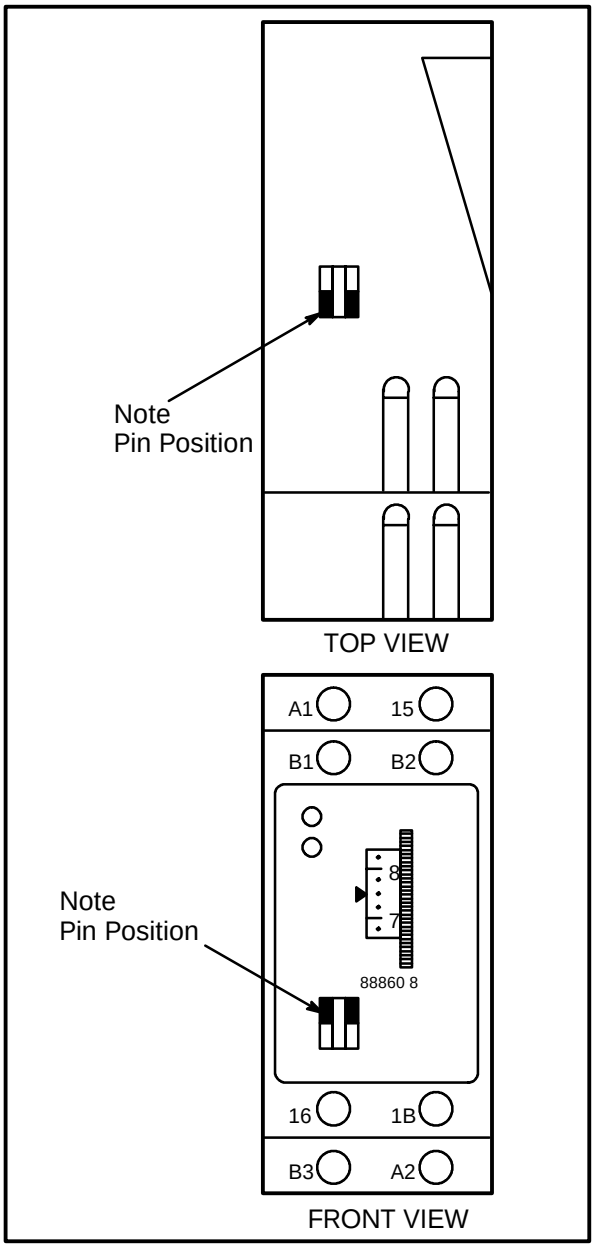


Figure 31

Designation: K4
Color: Beige body, Green label
Function: Delay on release. Dry up protector
Time: 15 seconds

P/N R0156

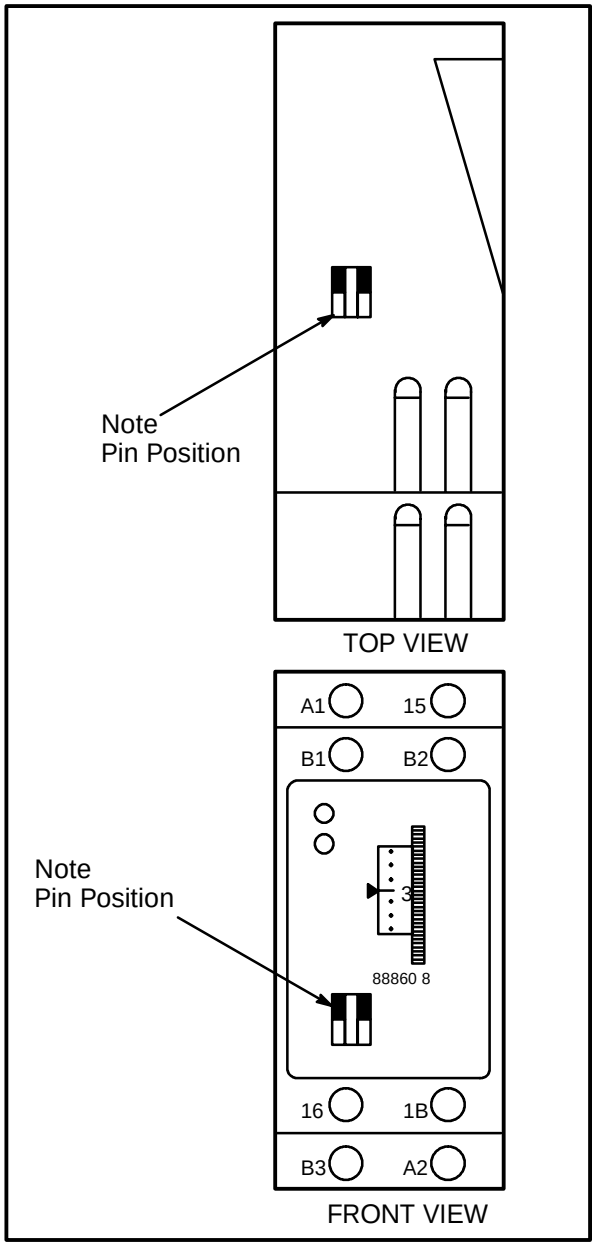


Figure 32

Designation: K5
Color: Beige body, Yellow label
Function: Delay on operate
Time: 6 seconds

Technical Information

Timers – Old Style

P/N R0156

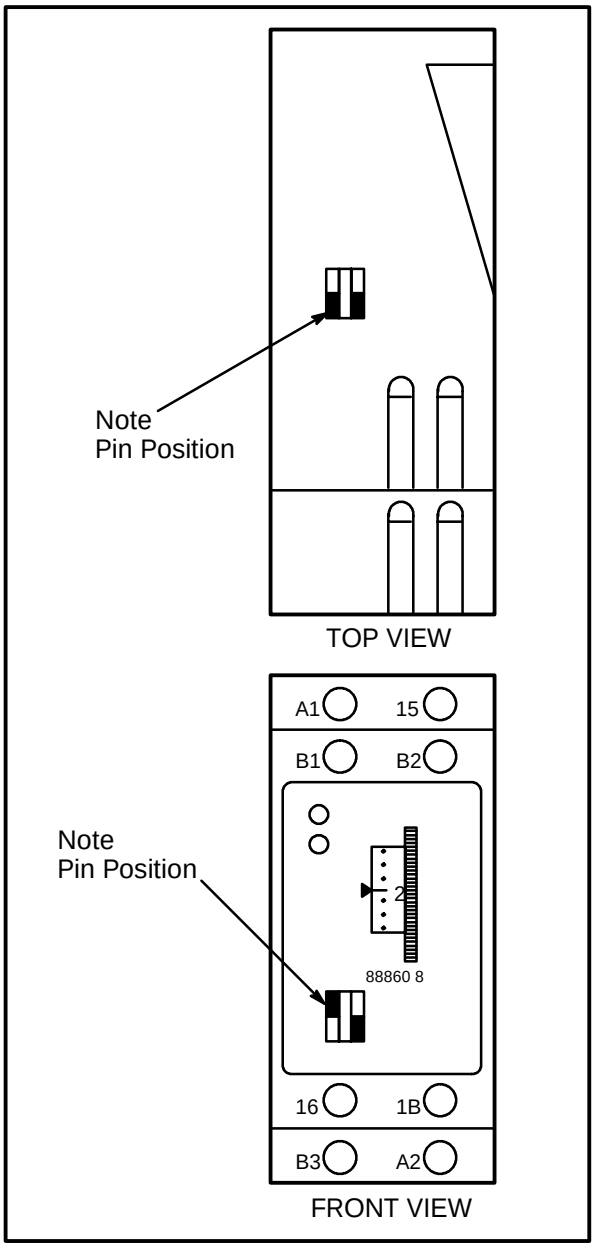


Figure 33

Designation: K6
Color: Beige body, Yellow label
Function: Blinking
Time: 0.5 seconds

P/N R0157

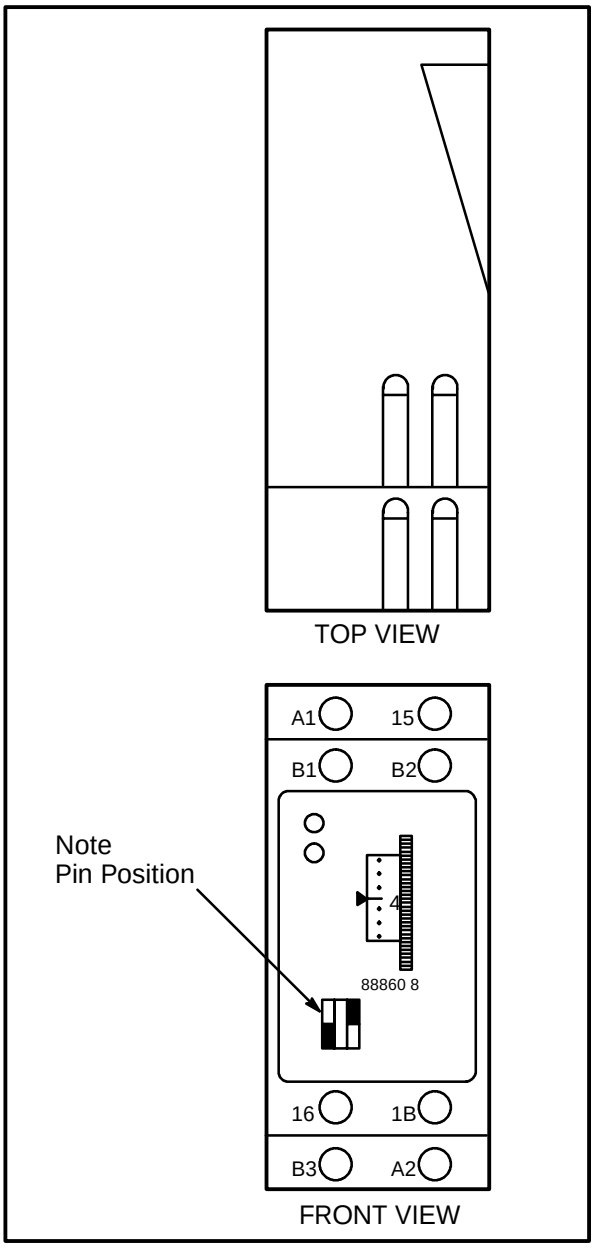


Figure 34

Designation: K7
Color: Brown body, Yellow label
Function: Delay on operate
Time: 1.0 seconds

P/N R1568(M2C)

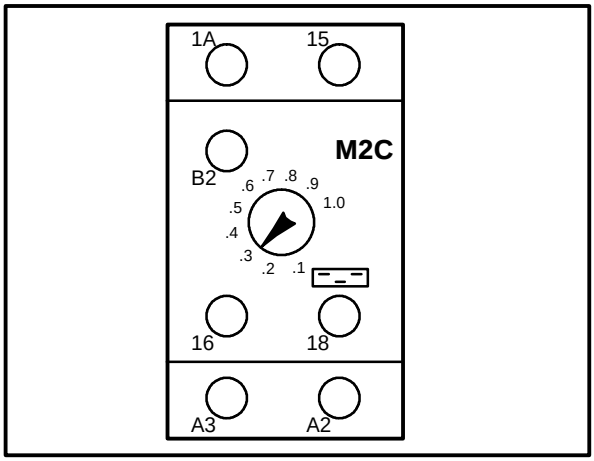


Figure 35

Designation: K4
Color: White body, Blue knobs
Function: R2506 Kit, Delay on release dry up protector
Time: 2.5 second

P/N R1569 (2ML)

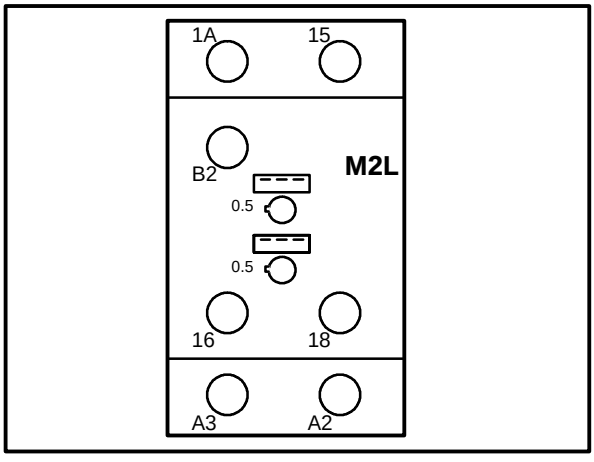


Figure 36

Designation: K6
Color: White body, Blue knobs
Function: Blinking
Time: 0.5 seconds

PN R1567 (M2U)

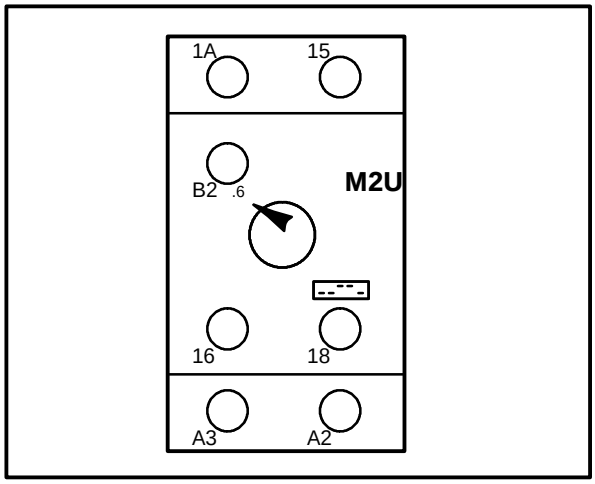


Figure 37

Designation: K5
Color: White body, Blue knobs
Function: R2523 Kit, Delay on operate
Time: 0.6 seconds

P/N R1567 (M2U)

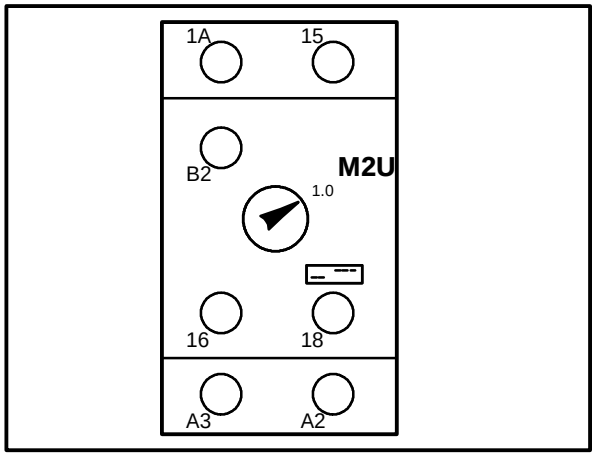


Figure 38

Designation: K7
Color: White body, Blue knobs
Function: Delay on operate
Time: 1.0 seconds